4.0 DISPERSION MODELING ANALYSIS

4.1 Dispersion Modeling Summary

As detailed previously in this report, MotivePower chose to replace the existing Tier II OP and PTC with new Permits-to-Construct in order to increase the allowable paint usage at paint shops located at MPAS and TEA facilities. After discussion with IDEQ staff, it was determined that MotivePower was required to perform a Full Impact Analysis in support of the permit renewal and modification. Emissions from the facility include particulate matter (PM and PM-10) from painting operations, natural gas combustion, and blasting of parts for cleaning purposes; nitrogen oxides (NOx), sulfur dioxide (SO_2), and carbon monoxide (CO) from natural gas combustion; volatile organic compounds (VOC) from natural gas combustion and painting operations; and hazardous air pollutants (HAP) and toxic air pollutants (TAP) from painting operations. American Geosciences, Inc. (AGI), of Murrysville, PA performed and prepared the dispersion modeling and summary analysis.

4.2 Model Description/Justification

The dispersion modeling will be performed utilizing the AMS/EPA Regulatory Model (AERMOD) to determine compliance with relevant IDEQ and Environmental Protection Agency (EPA) ambient air quality standards. AGI utilized AERMOD Version 07206 in the BEEST Suite (Version 9.65) created by Beeline-Software, of Austin, Texas. AGI's arrangement with Beeline-Software ensures that the newest version of AERMOD is available for use shortly after approval by EPA.

4.3 Elevation Data

Elevation data was determined by utilizing the AMS/EPA Regulatory Model Terrain Pre-processor (AERMAP). Digital Elevation Model (DEM) 1:24,000-Scale (7.5-minute) terrain data was obtained from Micropath Corporation of Golden, Colorado. AERMAP produced terrain base elevations for each receptor and source and a hill height scale value for each receptor. To ensure that all terrain that exceeds 10% slope is included, the following USGS 7.5-minute Quads were included in the modeling Domain: Boise South, Boise North, Robie Creek, and Lucky Peak.

4.4 Meteorological Data

Meteorological data was provided by IDEQ modeling staff. Pre-processed and AERMOD-ready surface (*.SFC) and profile (*.PFL) are based on data collected during 1987-1991 at the Boise, Idaho airport.

4.5 Land-Use Classification

EPA default modeling parameters wee used in conjunction with rural dispersion coefficients. As indicated by EPA modeling guidance (Section 8.2.8.b of *Guideline on Air Quality Models* (EPA 2001), if land use types I1, I2, C1, R2, and R3 (generally associated with industrial and residential use) account for 50 percent or more of the total area within 3 kilometers of the source, than urban dispersion coefficients are selected; otherwise, the appropriate rural coefficients are used. A visual inspection and knowledge of the vicinity determined that a major portion of the land use is considered type A3 - undeveloped (uncultivated wasteland), and while there exists light-moderate industrial (type I2) throughout the area, structures are generally separated by large areas of underdeveloped land. Therefore, and in keeping with previous MotivePower permit applications and dispersion modeling analyses, it was determined that rural dispersion coefficients are most appropriate.

4.6 Receptor Network

4.6.1 Non-Particulate Matter Spacing

For NO_2, SO_2, CO, and Lead (Pb) ambient air impact determinations, receptors were spaced at 25 meters along the MPAS and TEA ambient air boundary (fenceline) and out to a minimum of 100 meters from the boundaries. 50-meter spacing was then utilized to surround the 25-meter grid to at least 250 meters from the 25-meter grid. Outside the 50-meter grid, receptors were spaced at 100-meter intervals to 1,250 meters East-West and 1,150 meters North-South from the facility centroid. A diagram showing the receptor grid is located in Appendix F.

4.6.2 Particulate Matter (PM-10) Receptor Spacing

The inclusion of two neighboring facilities that are co-contributing sources for the 24-hour and annual PM-10 standards required multiple iterations of the modeling analysis. There were three versions of the dispersion modeling analysis used to demonstrate compliance with applicable standards:

The first receptor grid only contained 25-meter spaced receptors located within the Treasure Valley Forest Products – Yamhill facility (TVFP) boundary, and the analysis only considered PM-10 contributions from Central Paving and MotivePower, while the second receptor grid only contained 50-meter spaced receptors located within the Central Paving facility boundary, and the analysis only considered PM-10 contributions from TVFP and MotivePower.

The third receptor grid excluded all receptors from all ambient air boundaries (MPAS, TEA, TVFP, and Central Paving). This grid features 25-meter spacing along the boundaries and in

"hot spot" areas (i.e. around TVFP and TEA), 50-meter spacing surrounding the 25-meter grid, MPAS, and "hot spot" areas, and 100-meter spacing surrounding the entire area of interest.

4.7 Model Input Data

4.7.1 Building Input Parameters

Table 4.7.1.1 and 4.7.1.2 summarize the parameters of the buildings located at MPAS and TEA, and those located at Treasure Valley Forest Products-Yamhill (TVFP), respectively.

Table 4.7.1.1
Building Input Parameters (MPAS and TEA)

Building ID	Location Facility	Tiers #	Tier No.	Base Elevation (m)	Tier Height (m)	Corners #	Corner 1 Easting (m)	Corner 1 Northing (m)
SOUTH	MPAS	1	1	877.46	9.14	12	566,986.6	4,822,846.1
NORTH	MPAS	1	1	877	10.52	8	566,971.3	4,822,881.5
HROFFICE	MPAS	1	1	876	2.99	4	567,056.2	4,823,044.7
MAINOFC	MPAS	1	1	876.06	3.51	4	567,046.0	4,823,008.1
WAREHSE5	MPAS	1	1	877.52	3.51	4	567,085.4	4,822,874.4
WAREHSE3	MPAS	1	1	877.7	7.99	4	567,103.8	4,822,869.1
WHS1_2_4	MPAS	1	1	877	5.00	10	567,103.8	4,822,924.7
COMPOENT	MPAS	1	1	877	6.49	4	567,178.7	4,822,923.0
LOCOSHOP	MPAS	3	1	878.33	13.50	4	567,178.7	4,822,850.0
LOCOSHOP	MPAS	*	2	*	6.49	14	567,178.7	4,822,850.0
LOCOSHOP	MPAS	*	3	*	4.51	4	567,231.1	4,822,849.9
TUNNEL	MPAS	1	1	880.66	6.00	4	567,354.0	4,822,821.0
BOILERRO	MPAS	1	1	878.83	5.00	16	567,316.8	4,822,865.1
SWBP	MPAS	2	1	878	9.51	6	567,276.8	4,823,006.1
SWBP	MPAS	*	2	*	15.51	4	567,247.7	4,823,015.5
FINISHBU	MPAS	1	1	878	13.50	4	567,215.0	4,823,070.0
SMLPAINT	MPAS	1	1	877	6.00	12	567,178.4	4,822,973.3
FABSHOP	MPAS	1	1	877	10.97	12	567,103.8	4,823,068.3
ENGTEST	MPAS	1	1	878	4.50	4	567,256.0	4,823,039.0
EASTSHOP	MPAS	1	1	878	9.144	8	567,276.27	4,822,959.0
TEASHOP	TEA	2	1	892.69	5.49	6	568,040.7	4,822,315.0
TEASHOP	TEA	*	2	*	7.99	4	568,107.2	4,822,395.0
DYNO	TEA	1	1	893.42	7.01	4	568,118.8	4,822,332.5
BREAKRM	TEA	1	1	892.77	3.99	12	568,043.0	4,822,300.6
BLASTBTH	TEA	1	1	893	6.49	4	568,032.4	4,822,379.4

Table 4.7.1.2
Building Input Parameters (TVFP)

Building ID	Location Facility	Tiers #	Tier No.	Base Elevation (m)	Tier Height (m)	Corners #	Corner 1 Easting (m)	Corner 1 Northing (m)
KILNB	TVFP	2	1	887	25.00	4	567,743.1	4,822,011.3
KILNB	TVFP	*	2	*	2.32	4	567,743.1	4,822,011.3
GREEN	TVFP	2	1	887.18	20.00	4	567,796.6	4,822,083.5
GREEN	TVFP	*	2	*	1.86	4	567,796.6	4,822,083.5
PROCBLDG	TVFP	2	1	887	25.00	4	567,656.2	4,822,059.5
PROCBLDG	TVFP	*	2	*	2.32	4	567,656.2	4,822,059.5
SAWMILB	TVFP	2	1	887.98	50.00	8	567,657.7	4,822,259.3
SAWMILB	TVFP	*	2	*	4.65	8	567,657.7	4,822,259.3
MAINT	TVFP	2	1	887	30.00	7	567,683.1	4,822,156.2
MAINT	TVFP	*	2	*	2.79	7	567,683.1	4,822,156.2
POLEL	TVFP	2	1	887	20.00	4	567,708.3	4,822,041.8
POLEL	TVFP	*	2	*	1.86	4	567,708.3	4,822,041.8
BARKSCR	TVFP	2	1	889.1	18.00	4	567,702.0	4,822,297.2
BARKSCR	TVFP	*	2	*	1.67	4	567,702.0	4,822,297.2
NMAINT	TVFP	2	1	888.41	30.00	4	567,755.3	4,822,207.0
NMAINT	TVFP	*	2	*	2.79	4	567,755.3	4,822,207.0
OFFICE	TVFP	2	1	888.35	16.00	4	567,739.9	4,822,216.0
OFFICE	TVFP	*	2	*	1.49	4	567,739.9	4,822,216.0

4.7.2 Point Source Parameter Summary

Table 4.7.2.1 summarizes the emission point parameters of sources at MPAS and TEA, while Table 4.7.2.2 summarizes the characteristics of sources at the Treasure Valley Forest Products-Yamhill (TVFP) facility, as provided by IDEQ.

In addition to the sources in Table 4.7.2.1, IDEQ requested that PM-10 emission associated with the engine load testing at MPAS be included in the modeling exercise. This unit is exempt from permitting as it was previously determined to be a mobile source. However, the general background PM-10 concentrations outlined in Chapter 4.8.1 do not account for this source. Therefore, this source was explicitly modeled along with the other sources at MotivePower. This emission point was designated ENGLOAD, and is located southeast of the Finish Building at MPAS.

Table 4.7.2.1
Point Source Parameter Summary (MPAS and TEA)

Source ID	Emission Point Description	UTM Easting m	UTM Northing m	Elevation m	Stack Height m	Temperature K	Exit Velocity m/s	Diameter m
BOILER1	Seller Boilers	567,335.0	4,822,863.0	878.9	4.877	477.59	19.835	0.457
BOOTH_1A	South Paint Shop Booth 1	566,987.3	4,822,835.0	877.83	9.449	299.82	0.001	0.914
BOOTH_1B	South Paint Shop Booth 1	566,986.5	4,822,842.5	877.58	9.449	299.82	0.001	0.914
BOOTH_2A	South Paint Shop Booth 2	567,029.4	4,822,842.5	877.99	8.230	299.82	0.001	0.914
BOOTH_2B	South Paint Shop Booth 2	567,029.8	4,822,835.0	878	8.230	299.82	0.001	0.914
BOOTH_3A	North Paint Shop Booth 3	566,969.6	4,822,870.8	877	11.887	299.82	0.001	0.914
BOOTH_3B	North Paint Shop Booth 3	566,973.4	4,822,881.0	877	11.887	299.82	0.001	0.914
BOOTH_4A	North Paint Shop Booth 4	567,024.8	4,822,865.5	877.68	11.887	299.82	0.001	0.914
BOOTH_4B	North Paint Shop Booth 4	567,021.6	4,822,855.1	877.76	11.887	299.82	0.001	0.914
BOOTH_5A	SWBP Paint Booth 5	567,280.0	4,823,007.0	878	11.430	293.15	0.001	0.914
BOOTH_5B	SWBP Paint Booth 5	567,283.0	4,823,015.0	878	10.668	293.15	0.001	0.914
BOOTH_6A	Small Paint Shop Booth 6	567,178.0	4,822,972.0	877	7.010	293.15	0.001	1.219
BOOTH_6B	Small Paint Shop Booth 6	567,186.5	4,822,972.0	877.22	7.010	293.15	0.001	1.219
BOOTH_7	TEA Spray Paint Booth 7	568,056.0	4,822,394.7	893	10.668	293.15	0.001	1.067
BOOTH_8A	East Paint Shop Booth 8	567,297.0	4,822,953.0	878	10.972	299.82	0.001	0.914
BOOTH_8B	East Paint Shop Booth 8	567,294.0	4,822,942.0	878	10.972	299.82	0.001	0.914
BOOTH_9A	East Paint Shop Booth 9	567,303.0	4,822,951.0	878	10.972	299.82	0.001	0.914
BOOTH_9B	East Paint Shop Booth 9	567,299.0	4,822,941.0	878	10.972	299.82	0.001	0.914
SWBPBLST	SWBP Blasting/Heater	567,286.0	4,823,018.0	878	2.134	293.15	19.500	0.945
LOCOTEST	Locomotive Engine Test Cell	568,128.6	4,822,335.5	893.52	6.096	597.04	29.800	0.610
TEASHOTB	TEA Shot Blast Booth	568,036.5	4,822,388.5	893	4.572	293.15	15.000	0.579
LOCOBOIL	Locomotive Shop Steam Cleaner	567,316.0	4,822,812.0	881.52	9.754	366.48	0.001	0.405
SMPTBOIL	Small Paint Shop Steam Cleaner	567,187.0	4,822,966.5	877.23	1.829	366.48	0.001	12.573
COMPHEAT	Component Shop Furnace	567,184.5	4,822,891.9	877.95	8.534	435.93	5.900	0.405
TEAPROCE	TEA PROCECO Parts Washer	568,076.9	4,822,403.7	893	4.877	399.82	4.100	0.253
MAXOTUBE	Maxom Tube-O-Therm	567,313.0	4,822,799.0	882.47	2.134	310.93	10.700	0.152
BOILER	Wood-Fired Boiler	567,736.0	4,821,994.6	887	7.320	449.8	0.180	0.300
COMPRESS	Compressor Test Stand Engine	568,076.9	4,822,394.0	893.01	5.182	377.59	0.010	0.102
ENGLOAD	Mobile Engine Load Testing	567,265.3	4,823,038	878.55	6.1	597	29.8	0.6

Table 4.7.2.2
Point Source Parameter Summary (TVFP)

Source ID	Emission Point Description	UTM Easting m	UTM Northing m	Elevation m	Stack Height m	Temperature K	Exit Velocity m/s	Diameter m
HMASTACK	Unknown	567,044.1	4,822,710.8	885.9	35.000	199.99	16.290	4.500
GENHMA	Unknown	567,034.4	4,822,687.9	885.92	7.000	993	64.219	0.670
GCYCL	Green Lathe Cyclone	567,782.8	4,822,058.8	887	16.150	294.3	0.001	0.910
ACYCL	Processor A Cyclone	567,782.8	4,822,037.8	887.41	16.150	294.3	15.920	0.910
BCYCL	Processor B Cyclone	567,671.1	4,822,028.9	887	9.140	294.3	15.920	0.910
PCYCL	Pole Lathe Cyclone	567,714.8	4,822,054.8	887	16.150	294.3	0.001	0.910
SMILLV1	Sawmill vent 1	567,672.0	4,822,213.0	887.17	15.240	294	0.001	0.001
SMILLV2	Sawmill vent 2	567,674.0	4,822,213.0	887.2	15.240	294	0.001	0.001
SMILLV3	Sawmill vent 3	567,672.0	4,822,212.0	887.16	15.240	294	0.001	0.001
SMILLV4	Sawmill vent 4	567,674.0	4,822,212.0	887.19	15.240	294	0.001	0.001

4.7.3 Volume Source Parameter Summary

IDEQ requested that various natural gas-fired and liquid petroleum gas (LPG) space heaters be included in the modeling analysis. It was determined that including these emission points as volume sources was most appropriate. Therefore, the emission point parameters were established based on the building in which they are housed, and by utilizing the procedure outlined in Table 3-1 in EPA's User's Guide for the AMS/EPA Regulatory Model – AERMOD. Table 3-1 is included in Appendix G. These sources are summarized in Table 4.7.3.1, while Table 4.7.3.2 provides a summary of the co-contributing volume sources located at the Central Paving facility, as provided by IDEQ.

Table 4.7.3.1
Volume Source Parameter Summary (MPAS and TEA)

Source ID	Emission Point Location	UTM Easting M	UTM Northing m	Elevation m	Release Height m	Horizontal Dim. m	Vertical Dim. m
HROF_HTR	Small Admissions Building	567,061.8	4,823,030.5	876.06	1.50	4.41	1.40
MNOF_HTR	Large Admissions Building	567,056.8	4,822,961.0	877.00	1.75	10.80	1.63
FAB_HTR	Fabrication Shop	567,123.4	4,823,007.0	877.00	5.50	16.54	5.12
CMP_HTR	Component Shop	567,193.8	4,822,892.5	877.95	3.25	10.51	3.02
LOCO_HTR	Locomotive Shop	567,251.7	4,822,833.5	879.81	3.25	17.51	3.02
FNSH_HTR	Finish Shop	567,227.3	4,823,050.0	878.00	6.75	7.85	6.28
BLRM_HTR	Boiler Room	567,336.9	4,822,863.0	878.90	2.50	2.13	2.33

Table 4.7.3.1 (cont.)
Volume Source Parameter Summary (MPAS and TEA)

Source	Emission Point	UTM Easting	UTM Northing	Elevation	Release Height	Horizontal Dim.	Vertical Dim.
ID	Location	M	m	m	m	m	m
STH_HTR	South Large Paint Shop	567,007.1	4,822,840.0	877.75	4.50	6.15	4.19
NTH_HTR	North Large Paint Shop	566,998.4	4,822,868.5	877.00	5.25	4.68	4.88
SML_HTR	Small Paint Shop	567,182.2	4,822,963.5	877.07	3.00	3.45	2.79
SWBP_HTR	Strip-Wash-Blast-Paint Shop	567,285.6	4,822,994.5	878.00	4.75	10.19	4.42
W124_HTR	Warehouse 1_2_4	567,123.0	4,822,900.5	877.00	2.50	10.71	2.33
WHS3_HTR	Warehouse 3	567,122.6	4,822,862.0	877.93	4.00	5.62	3.72
WHS5_HTR	Warehouse 5	567,088.7	4,822,863.5	877.88	1.75	3.09	1.63
TEA_HTR	Truck and Engine Annex	568,073.8	4,822,359.0	893	4.00	17.03	3.72
TEAP_HTR	Truck and Engine Annex (Propane)	568,073.8	4,822,359.0	893	4.00	17.03	3.72

Table 4.7.3.2
Volume Source Parameter Summary (Central Paving)

Source	Emission Point	UTM Easting	UTM Northing	Elevation	Release Height	Horizontal Dim.	Vertical Dim.
ID	Location	M	m	m	m	m	m
GBIN	Green Lathe Cyclone Bin	567,782.8	4,822,058.8	887	4.12	1.28	1.91
ABIN	Processor A Cyclone Bin	567,782.8	4,822,037.8	887.41	4.12	1.13	1.91
BBIN	Processor B Cyclone Bin	567,671.1	4,822,028.9	887	4.12	0.71	1.91
PBIN	Pole Lathe Cyclone Bin	567,714.8	4,822,054.8	887	4.12	1.06	1.91
SBIN	Sawmill Sawdust Bin	567,678.3	4,822,276.7	888.34	4.12	1.06	1.91
WBIN1	Sawmill Wood Chip Bin	567,664.6	4,822,276.7	888.08	4.12	1.06	1.91
WBIN2	Sawmill Wood Chip Bin	567,671.1	4,822,276.7	888.21	4.12	1.06	1.91
KILN	Dry Kiln	567,745.5	4,822,007.0	887	3.8	6.05	3.54
DEBTOTAL	Total Debarker Emissions	567,715.8	4,822,298.0	889.23	5.49	0.85	2.55
KILN2	Dry Kiln	567,760.7	4,822,006.5	887.2	3.8	6.05	3.54
KILN3	Dry Kiln	567,775.7	4,822,007.0	887.49	3.8	6.05	3.54
KILN4	Dry Kiln	567,790.6	4,822,007.0	887.72	3.8	6.05	3.54
SCREEN	Primary Screen	567,447.1	4,822,228.3	885.85	5	1.16	1.16
CRUSHER	Crusher and Screen	567,424.1	4,822,219.8	885.09	5	2.33	1.13
CONVEY	Conveyor	567,448.9	4,822,218.4	885.59	5	6.98	1.16
TRUCK	Truck Unloading	567,491.0	4,822,214.0	886	2	1.16	0.93
DEBSCR	Debarker Screen	567,715.8	4,822,298.0	889.23	5.49	0.85	2.55

4.7.4 Point Source Emission Parameters

Table 4.7.4.1 documents the dispersion modeling input emissions data for the point sources located at MPAS and TEA. As described in Chapter 2.0, certain sources at MotivePower have operational restrictions. As such, these sources have both hourly and annual emission rates and limits. Therefore, for those sources with variable averaging periods (i.e. PM-10 24-hour and Annual), the hourly emission rate (lbs/hr) and annual emission rate (tons/yr) were utilized to accurately reflect the predicted impact during the respective averaging period.

Please note, for the TEASHOTB (Shot Blast Booth at the TEA) and LOCOTEST (Locomotive Engine Test Cell at the TEA) emission points, the Source Option Factor of HROFDY was utilized for the period of 5:00am to 1:00am, and for the COMPRESS (Compressor Test Stand Engine at the TEA) emission point, the HROFDY option was used for the period 5:00am to 9:00pm. As proposed in this application, these units will be limited to operating only during these time periods in order to ensure NAAQS compliance, in addition to any other existing or proposed operational limits.

Table 4.7.4.1
Point Source Emissions Input Data (MPAS and TEA)

Source ID	PM10 24-HR lbs/hr	PM10 Annual tons/yr	NO_2 Annual tons/yr	CO HR lbs/hr	SO_2 HR lbs/hr	SO_2 Annual tons/yr	LEAD Month lbs/hr
BOILER1	0.050	0.220	0.657	0.552	0.004	0.018	4.140E-07
BOOTH_1A	0.009	0.007					
BOOTH_1B	0.009	0.007					
BOOTH_2A	0.009	0.007					
BOOTH_2B	0.009	0.007					
BOOTH_3A	0.022	0.007	0.176	0.148	0.001	0.005	8.820E-07
BOOTH_3B	0.022	0.007	0.176	0.148	0.001	0.005	8.820E-07
BOOTH_4A	0.022	0.007	0.176	0.148	0.001	0.005	8.820E-07
BOOTH_4B	0.022	0.007	0.176	0.148	0.001	0.005	8.820E-07
BOOTH_5A	0.009	0.007					
BOOTH_5B	0.009	0.007					
BOOTH_6A	0.017	0.007					
BOOTH_6B	0.017	0.007					
BOOTH_7	0.035	0.007					
BOOTH_8A	0.009	0.007					
BOOTH_8B	0.009	0.007					
BOOTH_9A	0.009	0.007					
BOOTH_9B	0.009	0.007					

Table 4.7.4.1 (cont.)
Point Source Emissions Input Data (MPAS and TEA)

Source ID	PM10 24-HR lbs/hr	PM10 Annual tons/yr	NO_2 Annual tons/yr	CO HR lbs/hr	SO_2 HR lbs/hr	SO_2 Annual tons/yr	LEAD Month lbs/hr
SWBPBLST	0.086	0.376	1.948	0.374	0.003	0.012	3.51E-05
LOCOTEST	2.315	1.852	53.242	10.571	9.975	7.980	-
TEASHOTB	1.060	2.313	-	-	-	-	6.72E-04
LOCOBOIL	0.008	0.034	0.445	0.086	0.001	0.003	5.10E-07
SMPTBOIL	0.008	0.034	0.445	0.086	0.001	0.003	5.10E-07
COMPHEAT	0.015	0.065	0.859	0.165	0.001	0.005	9.84E-07
TEAPROCE	0.019	0.082	1.074	0.206	0.001	0.006	1.25E-06
MAXOTUBE	0.015	0.065	0.859	0.165	0.001	0.005	9.84E-07
COMPRESS	0.216	0.108	1.519	0.655	0.201	0.101	-
ENGLOAD	1.480	6.482	-	-	-	-	-

Table 4.7.4.2 summarizes the dispersion modeling input emissions data for the point sources located at the Treasure Valley Forest Products (TVFP) facility. It was assumed that sources at TVFP operate 24 hours per day.

Table 4.7.4.2
Point Source Emissions Input Data (TVFP)

Source ID	PM10 24-HR lbs/hr	PM10 Annual tons/yr
BOILER	0.097	0.425
GCYCL	1.234	5.403
ACYCL	0.123	0.540
BCYCL	0.018	0.081
PCYCL	0.120	0.525
SMILLV1	0.147	0.642
SMILLV2	0.147	0.642
SMILLV3	0.147	0.642
SMILLV4	0.147	0.642
HMASTACK	9.200	14.892
GENHMA	1.090	1.761

4.7.5 Volume Source Emissions Input Data

In addition to the Central Paving facility (a neighboring source), IDEQ requested that MotivePower include various natural gas-fired and liquid petroleum gas (LPG) space heaters to ensure compliance with the relevant NAAQS. Emissions from each unit were based on the heater operating at maximum capacity to determine worst-case potential impacts. As these space heaters only operate during the cold season, the Source Option Factor of MONTH was utilized to determine potential impacts during October through April of each year.

Table 4.7.5.1 provides the emissions input data for the PTC-insignificant indirect-fired space heaters that were modeled as volume sources at MPAS and TEA, while Table 4.7.5.2 outlines the emissions input data for the volume sources located at the Central Paving facility. It was presumed that the co-contributing source operates 24 hours per day.

Table 4.7.5.1
Volume Source Emissions Input Data (MPAS and TEA)

Source ID	PM10 24-HR lbs/hr	PM10 Annual tons/yr	NO_2 tons/yr	CO lbs/hr	SO_2-HR lbs/hr	SO_2 Annual tons/yr	Lead Month lbs/hr
HROF_HTR	0.0030	0.0131	0.1718	0.0329	0.0002	0.0011	1.961E-07
MNOF_HTR	0.0159	0.0695	0.9138	0.1753	0.0013	0.0055	1.043E-06
FAB_HTR	0.0670	0.2935	3.8613	0.7405	0.0053	0.0232	4.408E-06
CMP_HTR	0.0104	0.0457	0.6012	0.1153	0.0008	0.0036	6.863E-07
LOCO_HTR	0.0678	0.2970	3.9077	0.7494	0.0054	0.0234	4.461E-06
FNSH_HTR	0.0098	0.0431	0.5668	0.1087	0.0008	0.0034	6.471E-07
BLRM_HTR	0.0008	0.0033	0.0429	0.0082	0.0001	0.0003	4.902E-08
STH_HTR	0.0149	0.0653	0.8588	0.1647	0.0012	0.0052	9.804E-07
NTH_HTR	0.0045	0.0196	0.2576	0.0494	0.0004	0.0015	2.941E-07
SML_HTR	0.0071	0.0313	0.4122	0.0791	0.0006	0.0025	4.706E-07
SWBP_HTR	0.0572	0.2505	3.2966	0.6322	0.0045	0.0198	3.763E-06
W124_HTR	0.0067	0.0294	0.3865	0.0741	0.0005	0.0023	4.412E-07
WHS3_HTR	0.0037	0.0163	0.2147	0.0412	0.0003	0.0013	2.451E-07
WHS5_HTR	0.0026	0.0114	0.1503	0.0288	0.0002	0.0009	1.716E-07
TEA_HTR	0.0407	0.1782	2.3446	0.4497	0.0032	0.0141	2.676E-06
TEAP_HTR	0.0031	0.0135	0.0644	0.0039	0.1083	0.4743	0.000E+00

Table 4.7.5.2
Volume Source Emissions Input Data (Central Paving)

Source ID	PM10 24-HR lbs/hr	PM10 Annual tons/yr
GBIN	2.22E-03	9.72E-03
ABIN	2.22E-04	9.72E-04
BBIN	3.31E-05	1.45E-04
PBIN	2.16E-04	9.45E-04
SBIN	3.88E-04	1.70E-03
WBIN1	8.32E-04	3.64E-03
WBIN2	8.32E-04	3.64E-03
KILN	2.70E-03	1.18E-02
DEBTOTAL	2.100	9.198

Source ID	PM10 24-HR lbs/hr	PM10 Annual tons/yr
KILN2	0.003	0.012
KILN3	0.003	0.012
KILN4	0.003	0.012
SCREEN	0.444	1.945
CRUSHER	0.768	3.364
CONVEY	0.166	0.727
TRUCK	0.010	0.042
DEBSCR	0.071	0.310

4.8 Dispersion Modeling Results and Analysis

The following sections provide a summary of the dispersion modeling analysis, including background concentrations, assumptions, and a comparison to relevant standards.

4.8.1 Particulate Matter (PM-10)

Emissions of particulate matter less than ten (10) microns in diameter (PM-10) are used to determine potential ambient air impacts as compared to the National Ambient Air Quality Standards (NAAQS). Emissions of PM-10 from operations at MPAS, TEA, TVFP, the Central Paving (CP) facility and natural background concentrations were evaluated over two different averaging periods to determine NAAQS compliance. Predicted PM-10 impacts were then compared against the 24-hour averaging period standard (150 $\mu g/m^3$) and the annual averaging period standard (50 $\mu g/m^3$). Background concentrations as provided by IDEQ are 84 $\mu g/m^3$ (24-hour) and 27 $\mu g/m^3$ (annual).

As noted in the IDEQ response to the modeling protocol dated October 17, 2007, "...impacts from neighboring facilities are not included in the impact assessment from which the PM-10 emissions originated." Therefore, in order to account for the addition of co-contributing sources of PM-10, three modeling scenarios were analyzed.

Table 4.8.1.1 is a summary of the predicted impacts from operations at MPAS, TEA, and TVFP within the Central Paving facility ambient air boundary. As shown, MotivePower does not cause or significantly contribute to an exceedance of the NAAQS within the CP facility.

Table 4.8.1.1
Predicted PM-10 Ambient Impacts (MotivePower and TVFP)

Pollutant	Averaging Period	Sources	UTM Easting (m)	UTM Northing (m)	Predicted Impact ($\mu g/m^3$)	Background ($\mu g/m^3$)	Maximum Impact ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Date
PM-10	24-Hour [1]	MP, TVFP	567,550	4,822,400	54.83	84.00	138.83	150	10/22/1991
PM-10	Annual [2]	MP, TVFP	567,550	4,822,400	13.65	27.00	40.65	50	1989

[1] – Highest 6th high concentration over 5 years of NWS data

[2] – Highest ambient concentration

Table 4.8.1.2 is a summary of the predicted impacts from operations at MPAS, TEA, and CP within the Treasure Valley-Forest Products ambient air boundary. As shown, MotivePower does not cause or significantly contribute to an exceedance of the NAAQS within the TVFP facility.

Table 4.8.1.2
Predicted PM-10 Ambient Impacts (MotivePower and CP)

Pollutant	Averaging Period	Sources	UTM Easting (m)	UTM Northing (m)	Predicted Impact ($\mu g/m^3$)	Background ($\mu g/m^3$)	Maximum Impact ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Date
PM-10	24-Hour [1]	MP, CP	567,650	4,822,150	13.70	84	97.70	150	12/16/1991
PM-10	Annual [2]	MP, CP	567,650	4,822,150	3.05	27	30.05	50	1991

[1] – Highest 6th high concentration over 5 years of NWS data

[2] – Highest ambient concentration

Table 4.8.1.3 is a summary of the combined impacts of MPAS, TEA, TVFP, CP, and the background concentrations in all areas excluding the ambient air boundaries as controlled by each facility. The greatest predicted impact occurs along the fenceline northwest of the approximate center of TVFP operations. For the highest predicted impact, MotivePower's contribution is only 1.70 $\mu g/m^3$ for the 24-hour averaging period, and 0.241 $\mu g/m^3$ for the annual averaging period. Therefore, MotivePower does not cause or significantly contribute to an exceedance of the NAAQS.

Table 4.8.1.3
Predicted PM-10 Ambient Impacts (All Sources)

Pollutant	Averaging Period	Sources	UTM Easting (m)	UTM Northing (m)	Predicted Impact ($\mu g/m^3$)	Background ($\mu g/m^3$)	Maximum Impact ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Date
PM-10	24-Hour [1]	MP, TVFP, CP	567,649.50	4,822,333	149.58	84	233.58	150	2/19/1991
PM-10	Annual [2]	MP, TVFP, CP	567,649.50	4,822,333	46.64	27	73.64	50	1989
PM-10	24-Hour [1]	MP	568,024	4,822,423	49.10	84	133.1	150	10/9/1989
PM-10	Annual [2]	MP	567,199.31	4,823,089	8.5	27	35.5	50	1987

[1] – Highest 6th high concentration over 5 years of NWS data

[2] – Highest ambient concentration

4.8.2 Nitrogen Dioxide (NO2)

Emissions of nitrogen oxide (NOx) are used to determine potential ambient air impacts as compared to the NAAQS. All NOx emissions at MotivePower are a result of combustion processes. Over 90% of the NOx from such sources is NO rather than NO_2. However, as recommended by the Guideline on Air Quality Models in 40 CFR Ch 1, Appendix W to Part 51 (7/1/2003), total conversion to NOx was assumed for an initial screening. The relevant portion of this document can be found in Appendix G.

As outlined in the guidance document, compliance with NO_2 NAAQS could not be demonstrated using initial screening; therefore the second level screening analysis was used. The second screening analysis involves multiplying the dispersion modeling results obtained for the initial screening by "an empirically derived NO_2/NOx value of 0.75." Therefore, the predicted NOx impacts presented in Table 4.8.2 to demonstrate compliance with the NO_2 standard of 100 $\mu g/m^3$ have been adjusted by this ratio. In addition, an ambient air background concentration of 40 $\mu g/m^3$ NO_2, as provided by IDEQ, was included in the analysis. As shown, MotivePower does not cause of significantly contribute to an exceedance of the NO_2 NAAQS.

Table 4.8.2
Predicted NO_2 Ambient Impacts

Pollutant	Averaging Period	UTM Easting (m)	UTM Northing (m)	Predicted Impact ($\mu g/m^3$)	Background ($\mu g/m^3$)	Maximum Impact ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Date
NO_2	Annual [2]	568,043	4,822,411	59.42 [3]	40.0	99.42	100	1987

[2] – Highest ambient concentration

[3] – Impact based on 0.75 NO_2/NOx ratio

4.8.3 Carbon Monoxide (CO)

Emissions of carbon monoxide (CO) are used to determine potential ambient air impacts as compared to the National Ambient Air Quality Standards (NAAQS). Emissions of CO from operations at MPAS, TEA and natural background concentrations were evaluated over two different averaging periods to determine NAAQS compliance. PM-10 impacts were then compared against the 1-hour averaging period standard (40,000 $\mu g/m^3$) and the 8-hour averaging period standard (10,000 $\mu g/m^3$). Background concentrations as provided by IDEQ are 15,600 $\mu g/m^3$ (1-hour) and 5,200 $\mu g/m^3$ (8-hour). As shown, MotivePower does not cause of significantly contribute to an exceedance of the CO NAAQS.

Table 4.8.3
Predicted CO Ambient Impacts

Pollutant	Averaging Period	UTM Easting (m)	UTM Northing (m)	Predicted Impact ($\mu g/m^3$)	Background ($\mu g/m^3$)	Maximum Impact ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Date
CO	1-Hour [4]	568,043	4,822,429	875.61	15,600	16475.61	40,000	12/30/1989
CO	8-Hour [4]	568,024	4,822,422.5	346.16	5,200	5546.16	10,000	1/1/1991

[4] – Highest 2nd highest ambient concentration

4.8.4 Sulfur Dioxide (SO_2)

Emissions of sulfur dioxide (SO_2) are used to determine potential ambient air impacts as compared to the National Ambient Air Quality Standards (NAAQS). Emissions of SO_2 from operations at MPAS, TEA and natural background concentrations were evaluated over three different averaging periods to determine NAAQS compliance. SO_2 impacts were then compared against the 3-hour averaging period standard (1,300 $\mu g/m^3$), the 24-hour averaging period standard (365 $\mu g/m^3$), and the annual averaging period (80 $\mu g/m^3$). Background concentrations as provided by IDEQ are 120 $\mu g/m^3$ (3-hour), 40 $\mu g/m^3$ (24-hour), and 10 $\mu g/m^3$ (annual). As shown, MotivePower does not cause of significantly contribute to an exceedance of the SO_2 NAAQS.

Table 4.8.4
Predicted SO_2 Ambient Impacts

Pollutant	Averaging Period	UTM Easting (m)	UTM Northing (m)	Predicted Impact ($\mu g/m^3$)	Background ($\mu g/m3$)	Maximum Impact ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Date
SO2	3-Hour [4]	568,043	4,822,429	374.78	120.0	494.78	1,300	1/1/1991
SO2	24-Hour [4]	568,024	4,822,422.50	181.83	40.0	221.83	365	12/26/1987
SO2	Annual [2]	568,043	4,822,411	11.15	10.0	21.15	80	1987

[2] – Highest ambient concentration

[4] – Highest 2nd highest ambient concentration

4.8.5 Lead (Pb)

Emissions of elemental lead (Pb) are used to determine potential ambient air impacts as compared to the National Ambient Air Quality Standards (NAAQS). Emissions of lead from operations at MPAS, TEA and natural background concentrations were evaluated over a quarterly averaging period to determine NAAQS compliance. Predicted lead impacts were compared against the quarterly averaging period standard (1.5 $\mu g/m^3$). A background concentration as provided by IDEQ is 0.04 $\mu g/m^3$ (quarterly). As shown, MotivePower does not cause of significantly contribute to an exceedance of the lead NAAQS.

Table 4.8.5
Predicted Lead Ambient Impacts

Pollutant	Averaging Period	UTM Easting (m)	UTM Northing (m)	Predicted Impact µg/m3	Background µg/m3	Maximum Impact µg/m3	NAAQS µg/m3	Date
Lead	Monthly [5]	568,100.60	4,822,283	0.0066	0.04	0.05	1.50	Aug-87

[5] – Lead NAAQS is a quarterly averaging period. A monthly impact analysis was utilized to determine a conservative maximum impact.

4.8.6 Toxic Air Pollutants (TAP)

As demonstrated in Section 1.9, the proposed increase in paint products use did not cause any net increase of Toxic Air Pollutants (TAP) above their Emission Screening Level (EL). Therefore, no dispersion modeling analysis was required as part of this application.

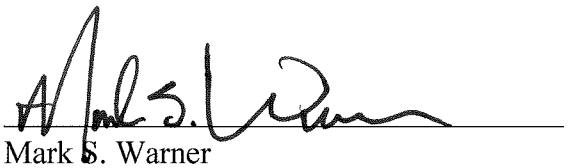
5.0 COMPLIANCE CERTIFICATION

As required in accordance with IDAPA 58.01.01.123 and .124, each regulated emission unit at the MotivePower Facility is in compliance with each of the applicable requirements. For each applicable requirement with which each regulated emission unit is currently in compliance, MotivePower certifies that the emissions unit will continue to comply with the applicable requirement.

With respect to each applicable requirement that will become effective during the term of the new Permits-to-Construct, each emission unit will comply with the applicable requirements on the schedule provided in this application package.

In addition to the enclosed information, the electronic data provided on compact disc in Appendix D, is considered part of this application and is also certified as accurate and complete.

Based upon information and belief formed after a reasonable inquiry, I, as a responsible official of the MotivePower Facility, certify the information contained in this report is accurate and true to the best of my knowledge.



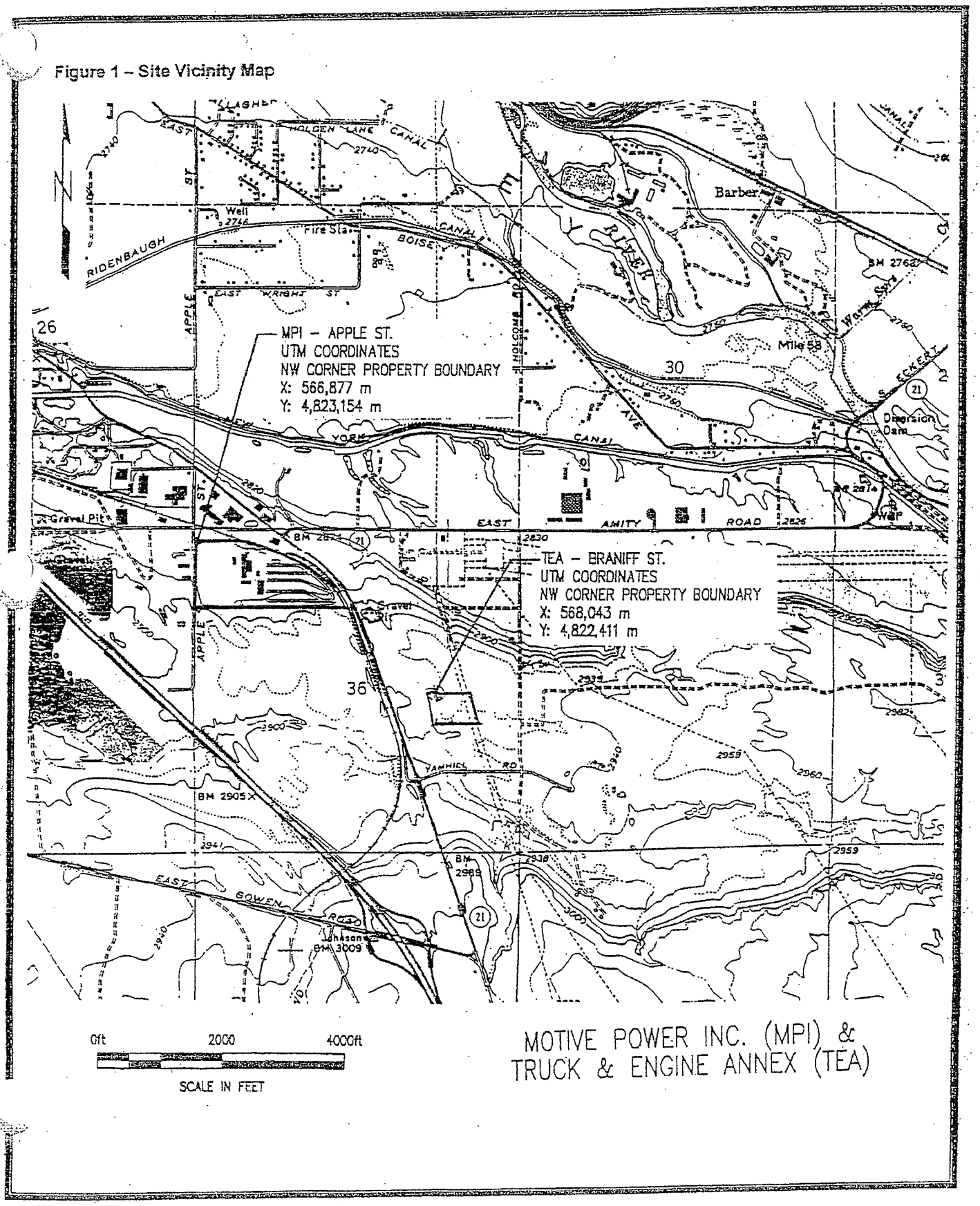
Mark S. Warner
Vice President & General Manager
MotivePower, Inc., a WABTEC company

11/19/07
Date

APPENDIX A

PLOT PLANS

Figure 1 – Site Vicinity Map



DWG NO. PE-1241 SH 01 REV 1

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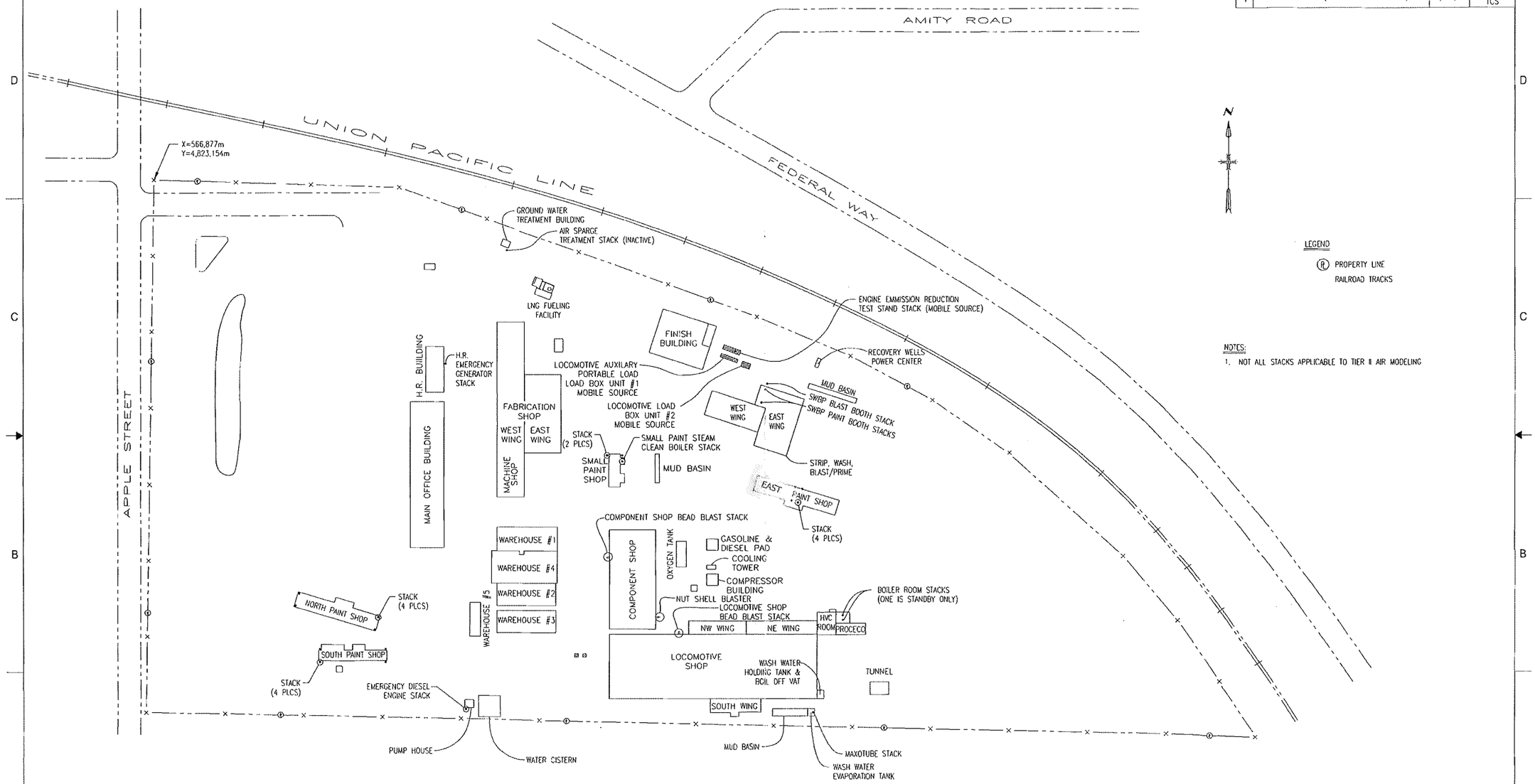
1	UPDATE DRAWING (CENTRAL PAINT SHOP)	04/27/06	EMYERS TCS



N

LEGEND

(R) PROPERTY LINE
RAILROAD TRACKS

NOTES:

1. NOT ALL STACKS APPLICABLE TO TIER II AIR MODELING

100 FT 50 FT 0 FT 100 FT 200 FT 300 FT 400 FT 500 FT

SCALE: 1"=100'

50M 25M 0M 10M 50M 100M 150M 200M

METER SCALE: 1"=30.479M

MotivePower
A Wabtec Company
4600 APPLE STREET
BOISE, ID 83716
208-947-4800

APPROVALS	DATE
DRAWN JDSCHAAK	09/04/01
CHECKED BY	
LEAD PRG FOREMAN	
MATERIAL PLANNER	
PROGRAM ENGINEER	

SITE PLAN, TIER II AIR OPERATING PERMIT, MOTIVEPOWER, APPLE ST

DWG SIZE D | DRAWING NUMBER PE-1241 | REV 1
SCALE 1:1200 | AUTOCAD | SHEET 01 OF 01

DWG NO. PE-1254 SH 01 REV 1

–	EO 010052; INITIAL RELEASE	08/07/03	EMYERS JDSCHAAK
1	UPDATE DRAWING (AIR COMP. TEST STAND)	05/01/06	TCS

X=568,043M
Y=4,822,411M

PROCECO WASHER STACK

SPRAY PAINT BOOTH STACK

AIR COMPRESSOR TEST STAND **STACK**

RESTROOM

CANOPY

PANCORN BEAD BLAST STACK

SHOT BLAST BOOTH STACK

WEST WING

EAST WING

TRANSFORMER PAD

CANOPY

TRUCK & ENGINE SHOP

CLEMCO BEAD BLAST STACK

COOLING TOWER

ENGINE TEST CELL STACK

ENGINE TEST CELL

REST ROOM

BREAK ROOM

PARKING LOT

N

BRANIFF STREET

NOTES:
1. NOT ALL STACKS APPLICABLE TO TIER II AIR MODELING

100 FT 50 FT 0 FT 33'-4" 66'-8" 100 FT 200 FT

SCALE: 1"=33'-4"

50M 25M 10M 0M 50M

METER SCALE

MotivePower
A Wabtec Company
4600 APPLE STREET
BOISE, ID 83716
208-947-4800

APPROVALS	DATE
DRAWN JDSCHAAK	09/04/01
CHECKED BY	
LEAD PRG FOREMAN	
MATERIAL PLANNER	
PROGRAM ENGINEER	

SITE PLAN, TIER II
AIR OPERATING PERMIT, ANNEX

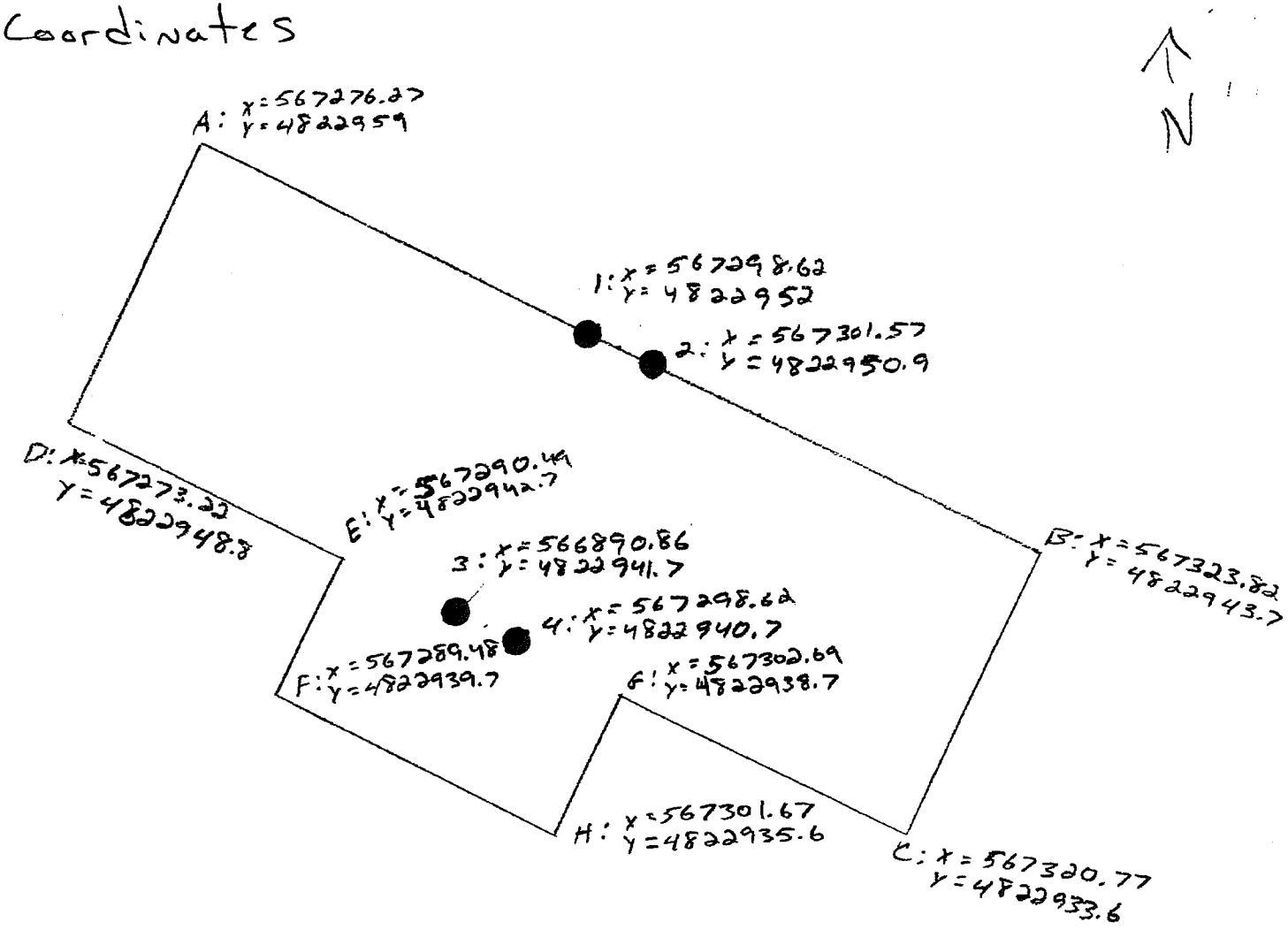
DWG SIZE D | DRAWING NUMBER PE-1254 | REV 1

SCALE 1:360 | AUTOCAD | SHEET 01 OF 01

Figure 3

Central Large Paint Shop Building

UTM Coordinates



● - Stacks

APPENDIX B

IDEQ Permits-to-Construct Application Forms
(Electronic Format)

APPENDIX C

Potential-to-Emit Calculations

MotivePower Inc.
A WABTEC Company
2007 Tier II Operating Permit Renewal Potential to Emit
Prepared by American Geosciences, Inc.
November-07

Totals in Tons per Year	PM	PM-10	NOx	CO	SO2	VOC	HAP	Lead
				Permit-to-Construct Sources				
Painting Operations at MPAS and TEA								
All Paint Booths								
- South Large Paint Shop (Booth 1 & 2)								
- North Large Paint Shop (Booth 3 & 4)								
- SWBP Building (Booth 5)	0.17	0.11				59.73	23.73	
- Small Paint Shop (Booth 6)								
- Spray Paint Booth, TEA Annex (Booth 7)								
- East Paint Shop (Booth 8 & 9)								
Other Emission Sources								
Seller Boiler No. 1 or No. 2	0.22	0.22	2.88	2.42	0.02	0.16		1.44E-05
SWBP Shot Blasting	0.65	0.23						1.44E-04
TEA Shot Blasting	6.62	2.31						1.47E-03
Main Facility Bead Blasting	0.01	0.01						
TEA Bead Blasting	0.01	0.01						
Locomotive Engine Test Cell Stand	1.85	1.85	53.24	8.46	7.98	2.96		
Compressor Test Stand Engine	0.11	0.11	1.52	0.33	0.10	0.12		
All Natural Gas Emissions	0.47	0.47	6.24	5.24	0.04	0.34		3.06E-02
Generator Diesel Fuel Emissions	0.00	0.00	0.01	0.00	0.00	0.00		
Fire Pump Diesel Fuel Emissions	0.08	0.08	1.11	0.24	0.07	0.09		
LPG Heater Emissions	0.00	0.00	0.11	0.02	0.00	0.00		
Total Emissions (tons per year)	**10.20**	**5.41**	**65.10**	**16.70**	**8.21**	**63.42**	**23.73**	**3.22E-02**

Speciated Hazardous Air Pollutants	tons/year
1,6-Hexamethylene Diisocyanate	0.011
Bis(2-ethylhexyl)phthalate (DEHP)	0.084
Ethyl benzene	2.599
Hexane	0.001
Methanol	2.947
Methylene chloride (Dichloromethane)	0.000
Naphthalene	0.001
Styrene	0.069
Toluene	7.389
Xylene	9.907
Cadmium	2.9E-05
Chromium^{3+}	1.1E-04
Manganese	3.4E-05
Nickel	1.1E-04
Lead	1.6E-03
Total HAP Emissions (tons per year)	**23.01**

MotivePower Inc.
A WABTEC Company
2007 Tier II Operating Permit Renewal Potential to Emit
Prepared by American Geosciences, Inc.
November-07

July 06 - June 07 Actuals	Total Usage (gal)	Weight Per Gallon (weighted average lbs/gal)	Total Usage (lbs)	VOC Content (weighted average lbs/gal)	VOC Emissions (lbs)	HAP Content (lbs/gal)	HAP Emissions (lbs)
General Use Solvent	3,030.00	6.70	20,309.94	6.70	20,309.94	2.88	8,733.28
All Paint Booths	8,952.10	9.89	88,525.16	3.71	33,229.97	1.40	12,564.18
Combined Usage	**11,982.10**		**108,835.10**		**53,539.91**		**21,297.46**

All Paint Booths Weighted Average	7/06-6/07 Solvent Use (gal)	7/06-6/07 Total Paint (gal)	7/06-6/07 Actual (gal)	Proposed (gal)	Scaling Factor
Increased from 13,049 to 26,750:	3,030.00	8,952.10	11,982.10	26,750.00	2.232

Potential-to-Emit		Total Usage (gal)	Weight Per Gallon (weighted average lbs/gal)	Total Usage (lbs)	VOC Content (weighted average lbs/gal)	VOC Emissions (lbs)	HAP Content (lbs/gal)	HAP Emissions (lbs)
General Use Solvent	Totals:	6,764.47	6.70	45,321.92	6.70	45,321.92	2.88	19,481.66
All Paint Booths	Average:	19,985.53	9.89	197,656.94	3.71	74,146.33	1.40	27,979.75
Combined Usage		**26,750.00**		**242,978.86**		**119,468.25**		**47,461.41**
		2.9545						

7/06 - 6/07 Actuals **Individual Hazardous Air Pollutants**		HAP Emissions (lbs)	HAP Emissions (tons)
1,6-Hexamethylene Diisocyanate	822-06-0	9.66	0.005
Bis(2-ethylhexyl)phthalate (DEHP)	117-81-7	74.87	0.037
Ethyl benzene	100-41-4	2,328.73	1.164
Hexane	110-54-3	0.70	0.000
Methanol	67-56-1	2,640.29	1.320
Methylene chloride (Dichloromethane)	75-09-2	0.16	0.000
Naphthalene	91-20-3	0.95	0.000
Styrene	100-42-5	61.49	0.031
Toluene	108-88-3	6,619.06	3.310
Xylene	1330-20-7	8,875.32	4.438

Scaled from 11,982.1 to 26,750 gallons/year **Individual Hazardous Air Pollutants**		HAP Emissions (lbs)	HAP Emissions (tons)
1,6-Hexamethylene Diisocyanate	822-06-0	21.56	0.011
Bis(2-ethylhexyl)phthalate (DEHP)	117-81-7	167.14	0.084
Ethyl benzene	100-41-4	5,198.88	2.599
Hexane	110-54-3	1.56	0.001
Methanol	67-56-1	5,894.44	2.947
Methylene chloride (Dichloromethane)	75-09-2	0.35	0.000
Naphthalene	91-20-3	2.12	0.001
Styrene	100-42-5	137.29	0.069
Toluene	108-88-3	14,777.03	7.389
Xylene	1330-20-7	19,814.13	9.907

MotivePower Inc.
A WABTEC Company
2007 Tier II Operating Permit Renewal Potential to Emit
Prepared by American Geosciences, Inc.
November-07

Worst-Case Hourly TAP Emission Summary
MotivePower Apple Street Facility and TEA

Maximum Daily Coating Usage

TAP	CAS No.	All Paint Booths 07/06-06/07 (lbs)	All Paint Booths Scaled to 26,750 (lbs)	All Paint Booths 07/06-06/07 (lb/gal)	South Paint Shop 07/06-06/07 (lb/gal)	North Paint Shop 07/06-06/07 (lb/gal)	Max Usage (lb/gal)	(100 gallon/day) (lb/hr)	EL (lb/hr)	AAC 24-hr Ave. mg/m3
1,2,4-Trimethyl benzene	95-63-6	**35.56**	79.40	0.0030	0.0055	0.0093	0.0093	0.0390	8.2	6.15
1,6-Hexamethylene Diisocyanate	822-06-0	**7.11**	15.86	0.0006	0.0009	0.0015	0.0015	**0.0062**	0.002	0.0015
1-Methoxy-2-propyl acetate	108-65-6	**278.74**	622.28	0.0233	0.0172	0.0208	0.0208	0.0868	24	3.6
Acetone	67-64-1	**13,732.64**	30,658.08	1.1461	0.0709	0.1177	0.1177	0.4906	119	89
[1] Amorphous silica	7631-86-9	**90.27**	201.53	0.0075	0.0033	0.0079	0.0079	0.0001	0.667	0.5
Bis(2-ethylhexyl)phthalate(DEHP)	117-81-7	**111.59**	249.12	0.0093	0.0034	0.0015	0.0034	0.0143	0.028	4.2 *
Butyl acetate	123-86-4	**4,353.94**	9,720.16	0.3634	0.3352	0.4388	0.4388	1.8282	47.3	35.5
Butyl alcohol	35296-72-1	**2,110.21**	4,711.03	0.1761	0.1937	0.1571	0.1937	0.8072	10	7.5
[1] Carbon black	1333-86-4	**205.94**	459.77	0.0172	0.0135	0.0193	0.0193	0.0002	0.23	0.175
[1] Cristobalite	14464-46-1	**98.26**	219.37	0.0082	0.0186	0.0307	0.0307	0.0003	0.0033	0.0025
Diisobutyl ketone	108-83-8	**619.74**	1,383.57	0.0517	0.1006	0.0688	0.1006	0.4192	9.67	7.25
Dipropylene glycol methyl ether	34590-94-8	**0.51**	1.15	0.0000	0.0000	0.0002	0.0002	0.0007	40	30
Ethyl acetate	141-78-6	**989.28**	2,208.55	0.0826	0.1784	0.2582	0.2582	1.0760	93.3	70.00
Ethylbenzene	100-41-4	**2,204.22**	4,920.92	0.1840	0.2738	0.2637	0.2738	1.1409	29	21.75
Ethylene Glycol Monobutyl Ether	111-76-2	**1,461.30**	3,262.36	0.1220	0.2098	0.1453	0.2098	0.8741	8	6
Heptane	142-82-5	**27.60**	61.62	0.0023	0.0049	0.0054	0.0054	0.0224	109	82
Isobutyl acetate	110-19-0	**888.19**	1,982.88	0.0741	0.0431	0.0342	0.0431	0.1794	46.7	35
Isophorone diisocyanate	4098-71-9	**1.04**	2.31	0.0001	0.0005	0.0007	0.0007	0.0031	0.006	0.0045
Isopropyl alcohol	67-63-0	**13,837.30**	30,891.73	1.1548	0.0303	0.0242	0.0303	0.1262	65.3	49
[1] Kaolin	1332-58-7	**1,605.64**	3,584.58	0.1340	0.2514	0.2049	0.2514	0.0026	0.133	0.1
[2] Methanol	67-56-1	**4,295.92**	9,590.63	0.3585	0.6582	0.6582	0.6582	2.7423	17.3	13
Methyl acetate	79-20-9	**809.49**	1,807.19	0.0676	0.0630	0.0526	0.0630	0.2625	40.7	30.5
Methyl amyl ketone	110-43-0	**4,573.81**	10,211.02	0.3817	0.4679	0.4676	0.4679	1.9497	15.7	11.75
Methyl ethyl ketone	78-93-3	**1,263.45**	2,820.66	0.1054	0.1516	0.1268	0.1516	0.6315	39.3	29.5
Methyl isoamyl ketone	110-12-3	**257.00**	573.74	0.0214	0.0166	0.0143	0.0166	0.0691	16	12
Methyl propyl ketone	107-87-9	**818.28**	1,826.81	0.0683	0.0771	0.0753	0.0771	0.3213	46.7	35
[1] Methylene chloride (Dichloromethane)	75-09-2	**0.16**	0.35	0.0000	---	0.00005	0.0000	0.0000	0.0016	0.24 *
Mica	12001-26-2	**3.34**	7.46	0.0003	0.0001	0.0010	0.0010	0.0043	0.2	0.15
Naphthalene	91-20-3	**0.66**	1.47	0.0001	0.0001	0.0001	0.0001	0.0005	3.33	2.5
Petroleum distillate	8032-32-4	**947.73**	2,115.80	0.0791	0.2555	0.2353	0.2555	1.0647	91.3	68.5
Petroleum distillate a (Stoddard Solvent/Mineral spirits)	8052-41-3	**773.85**	1,727.62	0.0646	0.1960	0.1773	0.1960	0.8167	35	26.25
Petroleum distillate b	8032-32-4	**43.06**	96.12	0.0036	0.0070	0.0053	0.0070	0.0290	91.3	68.5
Propylene glycol monomethyl ether acetate	108-65-6	**91.55**	204.39	0.0076	0.0230	0.0323	0.0323	0.1345	24	3.6
[1] Quartz-crystalline silica	14808-60-7	**3,942.69**	8,802.04	0.3290	0.3633	0.3054	0.3633	0.0038	0.0067	0.005
Styrene	100-42-5	**25.38**	56.67	0.0021	0.0069	0.0063	0.0069	0.0286	6.67	1
[2] Toluene	108-88-3	**10,605.90**	23,677.64	0.8851	1.5689	1.5513	1.5689	6.5371	25	18.75
Xylene	1330-20-7	**8,090.12**	18,061.18	0.6752	1.0341	0.9825	1.0341	4.3086	29	21.75

1 - Because these are non-volatile TAPs, the EL was calculated by multiplying the hourly rate times the transfer efficiency of 40% and by the minimum PM10 paint booth filter control rate of 99.58%.
2 - Methanol and Toluene are constituents of the General Use Solvent (GUS), which is used to clean the spray guns and for touch-up cleaning. As such, GUS use has been proportionally distributed by booth.
* - AAAC Annual Average (µg/m3)

TAP	CAS No.	Requested Emission Rate (lb/hr)	Current Permit Emission Rate (lb/hr)	Net Change Requested - Current (lb/hr)	EL (lb/hr)	AAC 24-hr Ave. (mg/m^3)
1,6-Hexamethylene Diisocyanate	822-06-0	0.0062	0.0046	**0.0016**	0.002	0.0015

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November-07

Worst-Case Hourly TAP Emission Summary
MotivePower Apple Street Facility and TEA

8,952.1 gal 07/06-06/07 Paint	Actual (gal)	Percent of Total (%)
South Paint Shop	4,021.58	44.92%
North Paint Shop	3,257.88	36.39%
SWBP Building	12.00	0.13%
Small Paint Shop	1,376.39	15.38%
TEA Paint Shop	284.25	3.18%

7/06-6/07 3,030 gal General Use Solvent	7/06-6/07 Actual (gal)	Scaled to 26,750 (gal)	Density (lbs/gal)	Methanol (13%) (lbs)	Toluene (30%) (lbs)
South Paint Shop	1,361.18	3,038.82		2646.81	6108.03
North Paint Shop	1,102.69	2,461.75		2144.18	4948.11
SWBP Building	4.06	9.07	6.70	7.90	18.23
Small Paint Shop	465.86	1,040.04		905.87	2090.48
TEA Paint Shop	96.21	214.79		187.08	431.72

Toxic Air Pollutants	Booth 1 & Booth 2 - South Paint Shop **4,021.58** TAP Emission Uncontrolled (lbs)	TAPs lbs/gal	Booth 3 & Booth 4 - North Paint Shop **3,257.88** TAP Emission Uncontrolled (lbs)	TAPs lbs/gal
1,2,4-Trimethyl benzene	22.15	0.0055	30.46	0.0093
1,6-Hexamethylene Diisocyanate	3.64	0.0009	4.88	0.0015
1-Methoxy-2-propyl acetate	69.02	0.0172	67.84	0.0208
Acetone	285.10	0.0709	383.57	0.1177
Amorphous silica	13.46	0.0033	25.69	0.0079
Bis(2-ethylhexyl)phthalate(DEHP)	13.81	0.0034	4.84	0.0015
Butyl acetate	1,348.21	0.3352	1,429.45	0.4388
[illegible]l alcohol	779.05	0.1937	511.79	0.1571
[illegible]bon black	54.20	0.0135	62.93	0.0193
Cristobalite	74.93	0.0186	99.94	0.0307
Diisobutyl ketone	404.64	0.1006	224.17	0.0688
Dipropylene glycol methyl ether	0.08	0.0000	0.51	0.0002
Ethyl acetate	717.64	0.1784	841.31	0.2582
Ethylbenzene	1,101.15	0.2738	859.24	0.2637
Ethylene Glycol Monobutyl Ether	843.70	0.2098	473.49	0.1453
Heptane	19.85	0.0049	17.54	0.0054
Isobutyl acetate	173.13	0.0431	111.32	0.0342
Isophorone diisocyanate	2.15	0.0005	2.42	0.0007
Isopropyl alcohol	121.80	0.0303	78.82	0.0242
Kaolin	1,011.06	0.2514	667.60	0.2049
Methanol	2646.81	0.6582	2144.18	0.6582
Methoxypropanol	11.48	0.0029	11.86	0.0036
Methyl acetate	253.37	0.0630	171.50	0.0526
Methyl amyl ketone	1,881.86	0.4679	1,523.32	0.4676
Methyl ethyl ketone	609.52	0.1516	412.96	0.1268
Methyl isoamyl ketone	66.68	0.0166	46.64	0.0143
Methyl propyl ketone	310.10	0.0771	245.21	0.0753
Methylene chloride (Dichloromethane)	---	---	0.16	0.0000
Mica	0.51	0.0001	3.34	0.0010
Naphthalene	0.44	0.0001	0.37	0.0001
Petroleum distillate	1,027.58	0.2555	766.58	0.2353
Petroleum distillate a (Stoddard Solvent)	788.24	0.1960	577.77	0.1773
Petroleum distillate b	27.97	0.0070	17.30	0.0053
Propylene glycol monomethyl ether acetate	92.50	0.0230	105.15	0.0323
Quartz-crystalline silica	1,460.86	0.3633	994.89	0.3054
Styrene	27.58	0.0069	20.39	0.0063
[illegible]ene	6,309.51	1.5689	5,054.07	1.5513
[illegible]ne	4,158.56	1.0341	3,200.93	0.9825

MotivePower Inc.
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2007 Tier II Operating Permit Renewal Potential to Emit
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November-07

Basis:

AP-42, Section 4.2.2.8, Automobile And Light Duty Truck Surface Coating Operations
Emission estimates and paint characteristics based upon July 2006 through June 2007 usage records.
For annual emissions, application of up to a maximum of 26,750 gallons of coatings and thinners 12-month period.
For hourly emissions, emission are based on up to 100 gallons per day of coatings and thinners at any one paint shop.
The solids content of the coatings is assumed to be 50% by weight solids (Actual average % by volume solids ~ 30%).
The density of coatings is assumed to be 10.0 lb/gal
(Note: The average density of coatings is ~ 9.0 lbs/gal based on 07/06-06/07 usage records).
The transfer efficiency of spray application is 40%
(AP-42, Section 4.2.2.8 Automobile and Light Duty Truck Surface Coating Operations).
All paint not transferred to the surface is collected by the ventilation system and emitted through stacks.
PM-10 fraction of 66 percent for paint aerosol not transferred (EPA, 1989).
PM / PM-10 control based on manufacturers specificiations.
Annual Emissions based on worst-case control (99.58%).

Facility-Wide Emissions - Annual
All Booths

Pollutant	Total Usage gallons/year	Density lbs/gal	Average Solids % by volume	Transfer Efficiency %	Control Efficiency %
Particulate Material - PM/PM-10	26,750	10.0	50.0%	40%	99.58%

PM-10 Fraction %	PM Emissions lbs/yr	PM-10 Emissions lbs/yr	**PM Emissions tons/yr**	**PM-10 Emissions tons/yr**
66.00%	337.05	222.5	**0.169**	**0.111**

Individual Paint Booth Emissions - Hourly
South Large Paint Shop
Booths 1 & 2

Pollutant	Total Usage gallons/day	Density lbs/gal	Average Solids % by volume	Transfer Efficiency %	Control Efficiency %
Particulate Material - PM/PM-10	100	10.0	50.0%	40%	99.58%

PM-10 Fraction %	**PM Emissions lbs/hr**	**PM-10 Emissions lbs/hr**	PM Emissions tons	PM-10 Emissions tons
66.00%	**0.052**	**0.035**	0.230	0.152

North Large Paint Shop
Booths 3 & 4

Pollutant	Total Usage gallons/day	Average Density lbs/gal	Average Solids % by volume	Transfer Efficiency %	Control Efficiency %
Particulate Material - PM/PM-10	100	10.0	50.0%	40%	99.58%

PM-10 Fraction %	**PM Emissions lbs/hr**	**PM-10 Emissions lbs/hr**	PM Emissions tons	PM-10 Emissions tons
66.00%	**0.052**	**0.035**	0.230	0.152

SWBP Building
Booth 5

Pollutant	Total Usage gallons/day	Average Density lbs/gal	Average Solids % by volume	Transfer Efficiency %	Control Efficiency %
Particulate Material - PM/PM-10	100	10.0	50.0%	40%	99.80%

PM-10 Fraction %	**PM Emissions lbs/hr**	**PM-10 Emissions lbs/hr**	PM Emissions tons	PM-10 Emissions tons
66.00%	**0.025**	**0.017**	0.110	0.072

Small Paint Shop
Booth 6

Pollutant	Total Usage gallons/day	Average Density lbs/gal	Average Solids % by volume	Transfer Efficiency %	Control Efficiency %
Particulate Material - PM/PM-10	100	10.0	50.0%	40%	99.58%

PM-10 Fraction %	**PM Emissions lbs/hr**	**PM-10 Emissions lbs/hr**	PM Emissions tons	PM-10 Emissions tons
66.00%	**0.052**	**0.035**	0.230	0.152

Truck and Engine Annex - Spray Paint Booth
Booth 7 %

Pollutant	Total Usage gallons/day	Average Density lbs/gal	Average Solids % by volume	Transfer Efficiency %	Control Efficiency %
Particulate Material - PM/PM-10	100	10.0	50.0%	40%	99.58%

PM-10 Fraction %	**PM Emissions lbs/hr**	**PM-10 Emissions lbs/hr**	PM Emissions tons	PM-10 Emissions tons
66.00%	**0.052**	**0.035**	0.230	0.152

East Paint Shop
Booths 8 & 9 %

Pollutant	Total Usage gallons/day	Average Density lbs/gal	Average Solids % by volume	Transfer Efficiency %	Control Efficiency %
Particulate Material - PM/PM-10	100	10.0	50.0%	40%	99.58%

PM-10 Fraction %	**PM Emissions lbs/hr**	**PM-10 Emissions lbs/hr**	PM Emissions tons	PM-10 Emissions tons
66.00%	**0.052**	**0.035**	0.230	0.152

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Basis:

Seller Boilers No.1 and No. 2 - 6.7 MMBtu/hr each.
Assume opeation at maximum load (6.7 MMBtu/hr).
Only 1 boiler operates at a time.
1,020 MMBtu/MMscf natural gas.
Emission factors are from EPA AP 42, Table 1.4 Natural Gas Combustion.
Uncontrolled boilers with less than 100 MMBtu/hr.
1 Therm = 0.1 MMBtu.

Seller Boilers

Maximum Heat Rate (MMBtu/hr)	6.70
Maximum Gas Consumption (MMscf/hr)	0.0066
Maximum Operation (hours)	8,760
Maximum Gas Consumption (MMscf/yr)	57.54

Pollutant	Emission Factor lbs/MMscf	Actual Usage MMscf	Emissions lbs/hr	Emissions tons/yr
Particulate Material - PM/PM_{10}	7.6	57.54	0.050	**0.219**
Sulfur Dioxide - SO_2	0.6		0.00394	**0.017**
Nitrogen Oxides - NO_x	100		0.657	**2.877**
Volatile Organic Compounds - VOC	5.5		0.03613	**0.158**
Carbon Monoxide - CO	84		0.552	**2.417**
Lead - Pb	0.0005		3.28E-06	**1.44E-05**

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Basis: AP-42, Section 13.2.6, Abrasive Blasting, Supplement D, 1997
SWBP Building limited to 282 tons/day blast material.
TEA Shot Blast Booth limited to 48,000 lbs/hr blast material and 4,370 hrs/yr of operation.
Apple Street and TEA Bead Blast Enclosures limited to 960 lbs/hr each.
TEA Shot Blast Booth only operates between 5:00am and 1:00am.

Strip-Wash-Blast-Paint Building, Apple Street
Steel-Grit Blasting Operation

Pollutant	Emission Factor lbs/1000 lbs	Blast Media tons/day	Control Efficiency %	Emissions lbs/hr	Emissions lbs/yr	Emissions tons/yr
Particulate Material - PM	6.3	282	99.9%	0.148	1,296.92	0.648
Particulate Material - PM-10	2.2			0.052	452.89	0.226
Hazardous Air Pollutants						
Cadmium	2.80E-04			6.58E-06	0.06	2.88E-05
Chromium^{3+}	1.10E-03			2.59E-05	0.23	1.13E-04
Manganese	3.30E-04			7.76E-06	0.07	3.40E-05
Nickel	1.10E-03			2.59E-05	0.23	1.13E-04
Lead	1.40E-03			3.29E-05	0.29	1.44E-04

Truck and Engine Annex, Braniff Street
Shot-Blast Booth

Pollutant	Emission Factor lbs/1000 lbs	Blast Media lbs/hour	Control Efficiency %	Emissions lbs/hr	Emissions lbs/yr	Emissions tons/yr
Particulate Material - PM	6.3	48,000	99.0%	3.02	13,245.12	6.623
Particulate Material - PM-10	2.2			1.06	4,625.28	2.313
Lead	1.40E-03			6.72E-04	2.94	1.47E-03

Main Facility, Apple Street
Locomotive Shop Bead Blast Enclosure

Pollutant	Emission Factor lbs/1000 lbs	Max Media lbs/hr	Control Efficiency %	Emissions lbs/hr	Emissions lbs/yr	Emissions tons/yr
Particulate Material - PM/PM-10	0.69	115	98.0%	0.0016	13.90	0.007

Main Facility, Apple Street
Component Shop Bead Blast Enclosure

Pollutant	Emission Factor lbs/1000 lbs	Blast Media lbs/hr	Control Efficiency %	Emissions lbs/hr	Emissions lbs/yr	Emissions tons/yr
Particulate Material - PM/PM-10	0.69	115	98.0%	0.0016	13.90	0.007

Truck and Engine Annex
Cycloblast Bead Blast Enclosure

Pollutant	Emission Factor lbs/1000 lbs	Blast Media lbs/hr	Control Efficiency %	Emissions lbs/hr	Emissions lbs/yr	Emissions tons/yr
Particulate Material - PM/PM-10	0.69	115	98.0%	0.0016	13.90	0.007

Truck and Engine Annex
Pangorn Bead Blast Enclosure

Pollutant	Emission Factor lbs/1000 lbs	Blast Media lbs/hr	Control Efficiency %	Emissions lbs/hr	Emissions lbs/yr	Emissions tons/yr
Particulate Material - PM/PM-10	0.69	115	98.0%	0.0016	13.90	0.007

BLASTING - INSIGNIFICANT ACTIVITIES

Main Facility, Apple Street
Nutshell Blasting Unit

Pollutant	Emission Factor lbs/hr	Baghouse Control %	Building Control %	Emissions lbs/hr	Emissions lbs/yr	Emissions tons/yr
Particulate Material - PM/PM-10	31.5	98.0%	70.0%	0.189	1,655.64	0.0074

- Nutshell blasting unit operates 0.5 hours per day, 3 days per week.

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Nov-07

Basis: **Emission factors for locomotive engine testing from:**
Technical Highlights, Emission Factors for Locomotives,
EPA Office of Mobile Sources, EPA 420-F-97-051, December 1997, Table 9.
Emission factors for 2008 fleet averages for all locomotive engines.
Older emission factors for SO2 emissions from AP-42.
Unit operates a maximum of 10 hours per day, and 1,600 hours per 12-month period.
Operation is limited to between 5:00am and 1:00am.
Annual emissions limited by hours of operation and fuel consumption.
No limit on number of locomotives tested.

Maximum Hourly Diesel Consumption	**175**	**gallons**
Maximum Annual Diesel Consumption	**280,000**	**gallons**

Locomotive Engine Test Cell Stand
Truck and Engine Annex

Pollutant	Emission Factor gm/gallon	Emission Factor lbs/1000 gal	Emissions lbs/hr	Emissions lbs/yr	Emissions tons/yr
Particulate Material - PM/PM_{10}	6.0		2.31	3,703.79	**1.85**
Sulfur Dioxide - SO_2		57.0	9.98	15,960.00	**7.98**
Nitrogen Oxides - NO_x	172.5		66.55	106,483.83	**53.24**
Volatile Organic Compounds - VOC	9.6		3.70	5,926.06	**2.96**
Carbon Monoxide - CO	27.4		10.57	16,913.95	**8.46**

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2007 Tier II Operating Permit Renewal Potential to Emit
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Nov-07

Basis:

Emission factors for locomotive engine testing from:
EPA AP 42, Chapter 3.3 Gasoline and Diesel Industrial Engines &
Chapter 3.4 Large Stationary Diesel and All Stationary Dual-Fuel Engines October 1996.
Sulfur content less than or equal to 0.5% by weight.
Operates between 5:00am and 9:00pm up to 1,000 hours per 12-month period.
Perfex Model 45E-68

Maximum Capacity	**98**	**horsepower**
Maximum Hourly Fuel Consumption	**5.7**	**gallons/hour**
Maximum Annual Operation	**1,000**	**hours/year**
Maximum Annual Fuel Consumption	**5,700.0**	**gallons**

Compressor Test Stand
Truck and Engine Annex

Pollutant	Emission Factor (lbs/hp-hr)	Emissions lbs/hr	Emissions lbs/yr	Emissions tons/yr
Particulate Material - PM/PM_{10}	0.0022	0.216	215.60	**0.1078**
Sulfur Dioxide - SO_2	0.00205	0.201	200.90	**0.1005**
Nitrogen Oxides - NO_x	0.031	3.038	3,038.00	**1.5190**
Volatile Organic Compounds - VOC	0.002514	0.246	246.37	**0.1232**
Carbon Monoxide - CO	0.00668	0.655	654.64	**0.3273**

Notes:
- This source is exempt from permitting requirements because the maximum heat input is less than 1.0 MMBtu/hr, as specified by IDAPA 58.01.01.222.02.d.
(5.7 gal/hr * 137,000 Btu/gal = 780,900 Btu/hr)

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Combustion Source Inventory (Heaters, Steam Cleaners, Parts Washers, Fire System Pump, & Generators)

MotivePower, Apple Street	*Total Heat Input (MMBtu/hr)*	*Max.Hours of Operation*
Diesel Fuel		
Southern Property Boundary, Diesel-fired, internal combustion engine, 143 HP, ***Fire System Pump*** with an estimated heat input of 0.685 MMBtu/hr. Tested once per week and activates during low water pressure conditions. Diesel fuel consumption averages approximately 50 gallons per year and less than 5 gallons/hour.	0.685	500
Human Resources Building, Diesel-fired, 12.2 HP ***Emergency Generator*** with an estimated heat input of 0.137 MMBtu/hr. This unit is tested once per week for approximately 0.5 hours, and diesel fuel consumption averages 20 gallons per year and less than 1 gallon/hour.	0.137	500
Natural Gas (Heaters operate a maximum of 7 months per year)		
Small Admission Building, 2 ***heaters*** with a heat input of 0.1 MMBtu/hr and 0.3 MMBtu/hr, each.	0.4	5,088
Large Admission Building, 16 ***heaters*** with a heat input of 0.133 MMBtu/hr, each.	2.128	5,088
Fabrication Shop, 25 ***heaters*** with a heat input of 0.350 MMBtu/hr, each; 2 ***heaters*** with a heat input of 0.093 MMBtu/hr, each; and 1 ***heater*** with a heat input of 0.056 MMBtu heat input.	8.992	5,088
Component Shop, 4 ***heaters*** with a heat input of 0.350 MMBtu/hr., each.	1.4	5,088
Locomotive Shop, 26 ***heaters*** with a heat input of 0.350 MMBtu/hr, each.	9.1	5,088
Finish Shop, 5 ***heaters*** with a heat input of 0.264 MMBtu/hr, each.	1.32	5,088
Boiler Room, 1 ***heater*** with a heat input of 0.100 MMBtu/hr.	0.1	5,088
South Large Paint Shop, 2 ***heaters*** with a heat input of 1.00 MMBtu/hr, each.	2.0	5,088
North Large Paint Shop, 4 ***heaters*** with a heat input of 0.150 MMBtu/hr, each and 2 ***heaters*** with a heat input of 3.6 MMBtu/hr, each.	7.8	5,088
East Paint Shop (not yet constructed), 2 ***heaters*** with a heat input of 3.30 MMBtu/hr, each.	6.6	5,088
Small Paint Shop, 1 ***heater*** with a heat input of 0.960 MMBtu/hr.	0.96	5,088
Strip-Wash-Blast-Paint Shop, 10 ***heaters*** with a heat input of 0.34 MMBtu/hr, each; 6 ***heaters*** with a heat input of 0.34 MMBtu/hr, each; 4 ***heaters*** with a heat input of 0.130 MMBtu/hr, each; 1 ***heater*** with a heat input of 0.175 MMBtu/hr; 1 ***heater*** with a heat input of 0.100 MMBtu/hr; 2 ***heaters*** with a heat input of 0.675 MMBtu/hr, each; 1 ***heater*** with a heat input of 0.092 MMBtu/hr; and 1 ***heater*** with a heat input of 4.536 MMBtu/hr.	12.213	5,088
Warehouse, 6 ***heaters*** with a heat input of 0.150 MMBtu/hr, each; 2 ***heaters*** with a heat input of 0.250 MMBtu/hr, each; and 1 ***heater*** with a heat input of 0.350 MMBtu/hr.	1.75	5,088
Process: Southern Property Boundary, ***Maxom Tube-O-Therm Evaporator*** with a heat input of 2.0 MMBtu.	2	8,760
Process: SWBP Building, 2 ***Steam Cleaners***, Hotsy Model S5735-3 with a heat input of 0.657 MMBtu/hr, each.	1.314	8,760
Process: Small Paint Shop, 1 ***Steam Cleaner***, Hotsy Model S5735-3 with a heat input of 0.657 MMBtu/hr.	1.314	8,760
TEA Facility, Braniff Street		
Natural Gas		
Space heating, 12 ***heaters*** with a heat input of 0.350 MMBtu/hr, each.	4.2	5,088
Process: heating equipment: 1 Hurricane 60-Hi Profile ***Parts Washer*** with a heat input of 0.380 MMBtu/hr; 1 Hurricane 84, ***Parts Washer*** with a heat input of 0.380 MMBtu/hr; 1 ***Proceco Parts Washer*** Model LTW 1000G with a heat input of 2.5 MMBtu/hr; and 1 LANDA Model ENG-4-300021C ***Parts Washer*** with a heat input of 0.500 MMBtu/hr.	3.76	8,760
Total Natural Gas Heating MMBtu/hr =	58.963	5,088
Total Natural Gas Process MMBtu/hr =	8.388	8,760

Two, 0.350 MMBtu/hr propane heaters are rented annuallyfor the Apple Street facility between October and February.
Each uses approximately 4,000 gallons of propane per year.

MotivePower Inc.
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2007 Tier II Operating Permit Renew al Potential to Emit
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Nov-07

Criteria Pollutant Emission Calculations
PTC Exempt Combustion Sources for Dispersion Modeling A nalysis

The emission of criteria pollutants are calculated using the total natural gas usage for the facility and EPA AP-42, 1.4 Natural Gas Combustion Emission Factors for an uncontrolled boiler. These sources are exempt from PTC requirements, but emissions were included in the dispersion modeling analy sis.

Note: 1.0 Therm is equal to 100,000 Btu and there are 1,020 Btu per one cubic foot (1 ft^3).
All sources are assumed to operate 8,760 hours per y ear.

North Large Paint Shop Heaters - 2 @	**3.60**	MMBtu/hr each
SWBP Heater - 1 @	**4.536**	MMBtu/hr each
East Paint Shop - 2 @	**3.300**	MMBtu/hr each
Locomotive Shop Steam Cleaner (LOCOBOIL) - 1 @	**1.04**	MMBtu/hr
Small Paint Shop Steam Cleaner (SMPT BOIL) - 1 @	**1.04**	MMBtu/hr
Component Shop Furnace (COMPHEAT) - 1 @	**2.00**	MMBtu/hr
TEA PROCECO Parts W asher (TEAPROCE) - 1 @	**2.50**	MMBtu/hr
Maxom Tube-O-Therm (MAXOTUBE) - 1 @	**2.00**	MMBtu/hr

North Large Paint Shop Heater (4 stacks)

Pollutant	Emission Factor lbs/MMscf	Emission Factor lbs/MMBtu	Emissions lbs/hr	Emissions lbs/hr/stack
Particulate Material - PM/PM_{10}	7.6	0.0075	5.36E-02	1.34E-02
Sulfur Dioxide - SO_2	0.6	0.0006	4.24E-03	1.06E-03
Nitrogen Oxides - NO_x	100	0.0980	7.06E-01	1.76E-01
Volatile Organic Compounds - VOC	5.5	0.0054	3.88E-02	9.71E-03
Carbon Monoxide - CO	84	0.0824	5.93E-01	1.48E-01
Lead - Pb	0.0005	4.90E-07	3.53E-06	8.82E-07

SWBP Heater (1 stack)

Pollutant	Emission Factor lbs/MMscf	Emission Factor lbs/MMBtu	Emissions lbs/hr	Emissions lbs/hr/stack
Particulate Material - PM/PM_{10}	7.6	0.0075	3.38E-02	3.38E-02
Sulfur Dioxide - SO_2	0.6	0.0006	2.67E-03	2.67E-03
Nitrogen Oxides - NO_x	100	0.0980	4.45E-01	4.45E-01
Volatile Organic Compounds - VOC	5.5	0.0054	2.45E-02	2.45E-02
Carbon Monoxide - CO	84	0.0824	3.74E-01	3.74E-01
Lead - Pb	0.0005	4.90E-07	2.22E-06	2.22E-06

East Paint Shop Heaters (4 stacks)

Pollutant	Emission Factor lbs/MMscf	Emission Factor lbs/MMBtu	Emissions lbs/hr	Emissions lbs/hr/stack
Particulate Material - PM/PM_{10}	7.6	0.0075	4.92E-02	1.23E-02
Sulfur Dioxide - SO_2	0.6	0.0006	3.88E-03	9.71E-04
Nitrogen Oxides - NO_x	100	0.0980	6.47E-01	1.62E-01
Volatile Organic Compounds - VOC	5.5	0.0054	3.56E-02	8.90E-03
Carbon Monoxide - CO	84	0.0824	5.44E-01	1.36E-01
Lead - Pb	0.0005	4.90E-07	3.24E-06	8.09E-07

Locomotive Shop Steam Cleaner (LOCOBOIL)

Pollutant	Emission Factor lbs/MMscf	Emission Factor lbs/MMBtu	Emissions lbs/hr	Emissions tons/yr
Particulate Material - PM/PM_{10}	7.6	0.0075	7.75E-03	3.39E-02
Sulfur Dioxide - SO_2	0.6	0.0006	6.12E-04	2.68E-03
Nitrogen Oxides - NO_x	100	0.0980	1.02E-01	4.47E-01
Volatile Organic Compounds - VOC	5.5	0.0054	5.61E-03	2.46E-02
Carbon Monoxide - CO	84	0.0824	8.56E-02	3.75E-01
Lead - Pb	0.0005	4.90E-07	5.10E-07	2.23E-06

Small Paint Shop Steam Cleaner (SMPT BOIL)

Pollutant	Emission Factor lbs/MMscf	Emission Factor lbs/MMBtu	Emissions lbs/hr	Emissions tons/yr
Particulate Material - PM/PM_{10}	7.6	0.0075	7.75E-03	3.39E-02
Sulfur Dioxide - SO_2	0.6	0.0006	6.12E-04	2.68E-03
Nitrogen Oxides - NO_x	100	0.0980	1.02E-01	4.47E-01
Volatile Organic Compounds - VOC	5.5	0.0054	5.61E-03	2.46E-02
Carbon Monoxide - CO	84	0.0824	8.56E-02	3.75E-01
Lead - Pb	0.0005	4.90E-07	5.10E-07	2.23E-06

Component Shop Furnace (COMPHEA T)

Pollutant	Emission Factor lbs/MMscf	Emission Factor lbs/MMBtu	Emissions lbs/hr	Emissions tons/yr
Particulate Material - PM/PM_{10}	7.6	0.0075	1.49E-02	6.53E-02
Sulfur Dioxide - SO_2	0.6	0.0006	1.18E-03	5.15E-03
Nitrogen Oxides - NO_x	100	0.0980	1.96E-01	8.59E-01
Volatile Organic Compounds - VOC	5.5	0.0054	1.08E-02	4.72E-02
Carbon Monoxide - CO	84	0.0824	1.65E-01	7.21E-01
Lead - Pb	0.0005	4.90E-07	9.80E-07	4.29E-06

TEA PROCECO Parts Washer (TEAPROCE)

Pollutant	Emission Factor lbs/MMscf	Emission Factor lbs/MMBtu	Emissions lbs/hr	Emissions tons/yr
Particulate Material - PM/PM_{10}	7.6	0.0075	1.86E-02	8.16E-02
Sulfur Dioxide - SO_2	0.6	0.0006	1.47E-03	6.44E-03
Nitrogen Oxides - NO_x	100	0.0980	2.45E-01	1.07E+00
Volatile Organic Compounds - VOC	5.5	0.0054	1.35E-02	5.90E-02
Carbon Monoxide - CO	84	0.0824	2.06E-01	9.02E-01
Lead - Pb	0.0005	4.90E-07	1.23E-06	5.37E-06

Maxom Tube-O-Therm (MAXOTUBE)

Pollutant	Emission Factor lbs/MMscf	Emission Factor lbs/MMBtu	Emissions lbs/hr	Emissions tons/yr
Particulate Material - PM/PM_{10}	7.6	0.0075	1.49E-02	6.53E-02
Sulfur Dioxide - SO_2	0.6	0.0006	1.18E-03	5.15E-03
Nitrogen Oxides - NO_x	100	0.0980	1.96E-01	8.59E-01
Volatile Organic Compounds - VOC	5.5	0.0054	1.08E-02	4.72E-02
Carbon Monoxide - CO	84	0.0824	1.65E-01	7.21E-01
Lead - Pb	0.0005	4.90E-07	9.80E-07	4.29E-06

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Criteria Pollutant Emission Calculations
PTC Exempt and "Insignificant" Combustion Sources for Dispersion Modeling Analysis

The emission of criteria pollutants are calculated using EPA AP-42, 1.4 Natural Gas Combustion Emission Factors for an uncontrolled boiler and 1.5 Liquefied Petroleum Gas Combustion for Commercial Boilers. These sources are exempt from PTC requirements and dispersion modeling, but were included in the modeling analysis as volume sources at the request of IDEQ. Hourly emissions are based on maximum operation, and annual emissions are based on the annual fuel consumption limit (124.7 MMscf). Operations are limited to 7 months per year (5088 hours).

Note: 1.0 Therm is equal to 100,000 Btu and there are 1,020 Btu per $1ft^3$ of natural gas, and 90,500 Btu/gal of propane.

Building Location	Model Source ID	No. Heaters	MMBtu/hr	Total MMBtu/hr	Bldg Total MMBtu/hr
Small Admissions Building	HROF_HTR	1	0.100	**0.100**	**0.400**
Small Admissions Building	HROF_HTR	1	0.300	**0.300**	
Large Admissions Building	MNOF_HTR	16	0.133	**2.128**	**2.128**
Fabrication Shop	FAB_HTR	25	0.350	**8.750**	**8.992**
Fabrication Shop	FAB_HTR	2	0.093	**0.186**	
Fabrication Shop	FAB_HTR	1	0.056	**0.056**	
Component Shop	CMP_HTR	4	0.350	**1.400**	**1.400**
Locomotive Shop	LOCO_HTR	26	0.350	**9.100**	**9.100**
Finish Shop	FNSH_HTR	5	0.264	**1.320**	**1.320**
Boiler Room	BLRM_HTR	1	0.100	**0.100**	**0.100**
South Large Paint Shop	STH_HTR	2	1.000	**2.000**	**2.000**
North Large Paint Shop	NTH_HTR	4	0.150	**0.600**	**0.600**
Small Paint Shop	SML_HTR	1	0.960	**0.960**	**0.960**
Strip-Wash-Blast-Paint Shop	SWBP_HTR	10	0.340	**3.400**	**7.677**
Strip-Wash-Blast-Paint Shop	SWBP_HTR	6	0.340	**2.040**	
Strip-Wash-Blast-Paint Shop	SWBP_HTR	4	0.130	**0.520**	
Strip-Wash-Blast-Paint Shop	SWBP_HTR	1	0.175	**0.175**	
Strip-Wash-Blast-Paint Shop	SWBP_HTR	1	0.100	**0.100**	
Strip-Wash-Blast-Paint Shop	SWBP_HTR	2	0.675	**1.350**	
Strip-Wash-Blast-Paint Shop	SWBP_HTR	1	0.092	**0.092**	
Warehouse 1_2_4	W124_HTR	6	0.150	**0.900**	**0.900**
Warehouse 3	WHS3_HTR	2	0.250	**0.500**	**0.500**
Warehouse 5	WHS5_HTR	1	0.350	**0.350**	**0.350**
Truck and Engine Annex	TEA_HTR	12	0.350	**4.200**	**5.460**
Truck and Engine Annex	TEA_HTR	1	0.380	**0.380**	
Truck and Engine Annex	TEA_HTR	1	0.380	**0.380**	
Truck and Engine Annex	TEA_HTR	1	0.500	**0.500**	
Truck and Engine Annex (PROPANE)	TEAP_HTR	2	0.350	**0.700**	**0.700**

Small Admissions Building

Pollutant	Emission Factor lbs/MMscf	Emission Factor lbs/MMBtu	Heating Rate MMBtu/hr	Emissions lbs/hr
Particulate Material - PM/PM_{10}	7.6	0.0075	0.400	2.98E-03
Sulfur Dioxide - SO_2	0.6	0.0006		2.35E-04
Nitrogen Oxides - NO_x	100	0.0980		3.92E-02
Volatile Organic Compounds - VOC	5.5	0.0054		2.16E-03
Carbon Monoxide - CO	84	0.0824		3.29E-02
Lead - Pb	0.0005	4.90E-07		1.96E-07

Large Admissions Building

Pollutant	Emission Factor lbs/MMscf	Emission Factor lbs/MMBtu	Heating Rate MMBtu/hr	Emissions lbs/hr
Particulate Material - PM/PM_{10}	7.6	0.0075	2.128	1.59E-02
Sulfur Dioxide - SO_2	0.6	0.0006		1.25E-03
Nitrogen Oxides - NO_x	100	0.0980		2.09E-01
Volatile Organic Compounds - VOC	5.5	0.0054		1.15E-02
Carbon Monoxide - CO	84	0.0824		1.75E-01
Lead - Pb	0.0005	4.90E-07		1.04E-06

Fabrication Shop

Pollutant	Emission Factor lbs/MMscf	Emission Factor lbs/MMBtu	Heating Rate MMBtu/hr	Emissions lbs/hr
Particulate Material - PM/PM_{10}	7.6	0.0075	8.992	6.70E-02
Sulfur Dioxide - SO_2	0.6	0.0006		5.29E-03
Nitrogen Oxides - NO_x	100	0.0980		8.82E-01
Volatile Organic Compounds - VOC	5.5	0.0054		4.85E-02
Carbon Monoxide - CO	84	0.0824		7.41E-01
Lead - Pb	0.0005	4.90E-07		4.41E-06

Component Shop

Pollutant	Emission Factor lbs/MMscf	Emission Factor lbs/MMBtu	Heating Rate MMBtu/hr	Emissions lbs/hr
Particulate Material - PM/PM_{10}	7.6	0.0075	1.400	1.04E-02
Sulfur Dioxide - SO_2	0.6	0.0006		8.24E-04
Nitrogen Oxides - NO_x	100	0.0980		1.37E-01
Volatile Organic Compounds - VOC	5.5	0.0054		7.55E-03
Carbon Monoxide - CO	84	0.0824		1.15E-01
Lead - Pb	0.0005	4.90E-07		6.86E-07

Locomotive Shop

Pollutant	Emission Factor lbs/MMscf	Emission Factor lbs/MMBtu	Heating Rate MMBtu/hr	Emissions lbs/hr
Particulate Material - PM/PM_{10}	7.6	0.0075	9.100	6.78E-02
Sulfur Dioxide - SO_2	0.6	0.0006		5.35E-03
Nitrogen Oxides - NO_x	100	0.0980		8.92E-01
Volatile Organic Compounds - VOC	5.5	0.0054		4.91E-02
Carbon Monoxide - CO	84	0.0824		7.49E-01
Lead - Pb	0.0005	4.90E-07		4.46E-06

Finish Shop

Pollutant	Emission Factor lbs/MMscf	Emission Factor lbs/MMBtu	Heating Rate MMBtu/hr	Emissions lbs/hr
Particulate Material - PM/PM_{10}	7.6	0.0075	1.320	9.84E-03
Sulfur Dioxide - SO_2	0.6	0.0006		7.76E-04
Nitrogen Oxides - NO_x	100	0.0980		1.29E-01
Volatile Organic Compounds - VOC	5.5	0.0054		7.12E-03
Carbon Monoxide - CO	84	0.0824		1.09E-01
Lead - Pb	0.0005	4.90E-07		6.47E-07

Boiler Room

Pollutant	Emission Factor lbs/MMscf	Emission Factor lbs/MMBtu	Heating Rate MMBtu/hr	Emissions lbs/hr
Particulate Material - PM/PM_{10}	7.6	0.0075	0.100	7.45E-04
Sulfur Dioxide - SO_2	0.6	0.0006		5.88E-05
Nitrogen Oxides - NO_x	100	0.0980		9.80E-03
Volatile Organic Compounds - VOC	5.5	0.0054		5.39E-04
Carbon Monoxide - CO	84	0.0824		8.24E-03
Lead - Pb	0.0005	4.90E-07		4.90E-08

South Large Paint Shop

Pollutant	Emission Factor lbs/MMscf	Emission Factor lbs/MMBtu	Heating Rate MMBtu/hr	Emissions lbs/hr
Particulate Material - PM/PM_{10}	7.6	0.0075	2.000	1.49E-02
Sulfur Dioxide - SO_2	0.6	0.0006		1.18E-03
Nitrogen Oxides - NO_x	100	0.0980		1.96E-01
Volatile Organic Compounds - VOC	5.5	0.0054		1.08E-02
Carbon Monoxide - CO	84	0.0824		1.65E-01
Lead - Pb	0.0005	4.90E-07		9.80E-07

North Large Paint Shop

Pollutant	Emission Factor lbs/MMscf	Emission Factor lbs/MMBtu	Heating Rate MMBtu/hr	Emissions lbs/hr
Particulate Material - PM/PM_{10}	7.6	0.0075	0.600	4.47E-03
Sulfur Dioxide - SO_2	0.6	0.0006		3.53E-04
Nitrogen Oxides - NO_x	100	0.0980		5.88E-02
Volatile Organic Compounds - VOC	5.5	0.0054		3.24E-03
Carbon Monoxide - CO	84	0.0824		4.94E-02
Lead - Pb	0.0005	4.90E-07		2.94E-07

Small Paint Shop

Pollutant	Emission Factor lbs/MMscf	Emission Factor lbs/MMBtu	Heating Rate MMBtu/hr	Emissions lbs/hr
Particulate Material - PM/PM_{10}	7.6	0.0075	0.960	7.15E-03
Sulfur Dioxide - SO_2	0.6	0.0006		5.65E-04
Nitrogen Oxides - NO_x	100	0.0980		9.41E-02
Volatile Organic Compounds - VOC	5.5	0.0054		5.18E-03
Carbon Monoxide - CO	84	0.0824		7.91E-02
Lead - Pb	0.0005	4.90E-07		4.71E-07

Strip-Wash-Blast-Paint Shop

Pollutant	Emission Factor lbs/MMscf	Emission Factor lbs/MMBtu	Heating Rate MMBtu/hr	Emissions lbs/hr
Particulate Material - PM/PM_{10}	7.6	0.0075	7.677	5.72E-02
Sulfur Dioxide - SO_2	0.6	0.0006		4.52E-03
Nitrogen Oxides - NO_x	100	0.0980		7.53E-01
Volatile Organic Compounds - VOC	5.5	0.0054		4.14E-02
Carbon Monoxide - CO	84	0.0824		6.32E-01
Lead - Pb	0.0005	4.90E-07		3.76E-06

Warehouse 1_2_4

Pollutant	Emission Factor lbs/MMscf	Emission Factor lbs/MMBtu	Heating Rate MMBtu/hr	Emissions lbs/hr
Particulate Material - PM/PM_{10}	7.6	0.0075	0.900	6.71E-03
Sulfur Dioxide - SO_2	0.6	0.0006		5.29E-04
Nitrogen Oxides - NO_x	100	0.0980		8.82E-02
Volatile Organic Compounds - VOC	5.5	0.0054		4.85E-03
Carbon Monoxide - CO	84	0.0824		7.41E-02
Lead - Pb	0.0005	4.90E-07		4.41E-07

Warehouse 3

Pollutant	Emission Factor lbs/MMscf	Emission Factor lbs/MMBtu	Heating Rate MMBtu/hr	Emissions lbs/hr
Particulate Material - PM/PM_{10}	7.6	0.0075	0.500	3.73E-03
Sulfur Dioxide - SO_2	0.6	0.0006		2.94E-04
Nitrogen Oxides - NO_x	100	0.0980		4.90E-02
Volatile Organic Compounds - VOC	5.5	0.0054		2.70E-03
Carbon Monoxide - CO	84	0.0824		4.12E-02
Lead - Pb	0.0005	4.90E-07		2.45E-07

Warehouse 5

Pollutant	Emission Factor lbs/MMscf	Emission Factor lbs/MMBtu	Heating Rate MMBtu/hr	Emissions lbs/hr
Particulate Material - PM/PM_{10}	7.6	0.0075	0.350	2.61E-03
Sulfur Dioxide - SO_2	0.6	0.0006		2.06E-04
Nitrogen Oxides - NO_x	100	0.0980		3.43E-02
Volatile Organic Compounds - VOC	5.5	0.0054		1.89E-03
Carbon Monoxide - CO	84	0.0824		2.88E-02
Lead - Pb	0.0005	4.90E-07		1.72E-07

Truck and Engine Annex

Pollutant	Emission Factor lbs/MMscf	Emission Factor lbs/MMBtu	Heating Rate MMBtu/hr	Emissions lbs/hr
Particulate Material - PM/PM_{10}	7.6	0.0075	5.460	4.07E-02
Sulfur Dioxide - SO_2	0.6	0.0006		3.21E-03
Nitrogen Oxides - NO_x	100	0.0980		5.35E-01
Volatile Organic Compounds - VOC	5.5	0.0054		2.94E-02
Carbon Monoxide - CO	84	0.0824		4.50E-01
Lead - Pb	0.0005	4.90E-07		2.68E-06

Truck and Engine Annex - Propane-Fired Heaters - Operates October - Februaryand uses approximately8,000 total gallons.

Pollutant	Emission Factor lbs/1,000 gal	Heating Rate MMBtu/hr	Max Fuel Use gal/hr	Emissions lbs/hr	Approximate Annual Use gallons	Emissions ton/yr
Particulate Material - PM/PM_{10}	0.4	0.700	7.735	3.09E-03	8,000	0.0016
Sulfur Dioxide - SO_2	14			1.08E-01		0.056
Nitrogen Oxides - NO_x	1.9			1.47E-02		0.0076
Volatile Organic Compounds - VOC	5.5			4.25E-02		0.022
Carbon Monoxide - CO	0.5			3.87E-03		0.002

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Criteria Pollutant Emission Calculations
Proposed Natural Gas Consumption Cap

All heaters and cleaning equipment at the facility are natural gas fired with the exception of two propane heaters that are used in temporary shelters at the facility. The emission of criteria pollutants are calculated using the total natural gas usage for the facility and EPA AP-42, 1.4 Natural Gas Combustion Emission Factors for an uncontrolled boiler.

The maximum natural gas consumption is limited by the IDEQ Tier II Operating Permit T2-060031 (based on historical usage and a safety factor to allow for fluctuations in weather). Natural gas usage is recorded by monthly receipts from the supplier (Intermountain Gas Company).

Maximum Annual Natural Gas Combustion	**124.7**	MM ft^3/year
Maximum Hourly Natural Gas Combustion	**67.351**	MMBtu/hr
Maximum Hourly Natural Gas Consumption	**0.066**	MMscf/hr

The calculated emissions are as followed:

Pollutant	**Emission Factor** lbs/ft^3 nat gas	**Emissions** lbs/hr	**Emissions** tons/yr
Particulate Material - PM / PM_{10}	0.0000076	0.502	**0.474**
Nitrogen Oxides - NO_x	0.0001	6.603	**6.235**
Carbon Monoxide - CO	0.000084	5.547	**5.237**
Sulfur Dioxide - SO_2	0.0000006	0.040	**0.037**
Volatile Organic Compounds - VOC	0.0000055	0.363	**0.343**
Lead	0.00000049	0.032	**0.031**

Note:

1.0 Therm is equal to 100,000 Btu and there are 1,020 Btu per ft^3.

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Internal Combustion Engines - Reciprocating - Diesel
Fire Water Pump

Mechanical Output	143	horsepower (hp)
Sulfur Content of Diesel Fuel	0.5	%
Maximum Operation	500	hours
Maximum Fuel Consumption	5	gal/hr

Pollutant	Emission Factor (lbs/hp-hr)	Emission Rate (lbs/hr)	Emissions (tons/yr)
Particulate Material - PM / PM_{10}	0.0022	0.315	**0.0787**
Nitrogen Oxides - NO_x	0.031	4.433	**1.1083**
Carbon Monoxide - CO	0.00668	0.955	**0.2388**
Sulfur Dioxide - SO2	0.00205	0.293	**0.0733**
Volatile Organic Compounds - VOC	0.002514	0.360	**0.0899**

Note:
- Emission factors are from EPA AP 42, 3.3 Gasoline and Diesel Industrial Engines & 3.4 Large Stationary Diesel and All Stationary Dual-Fuel Engines 10/96. (Less than 600 hp)
- The TOC emissions are assumed to be equivalent to VOC emissions.
- This source is exempt from permitting requirements because the maximum heat input is less than 1.0 MMBtu/hr, as specified by IDAPA 58.01.01.222.02.d.
  (5.0 gal/hr * 137,000 Btu/gal = 685,000 Btu/hr)

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Internal Combustion Engines - Reciprocating - Diesel
Emergency Generator

Mechanical Output	12.2	horsepower (hp)
Sulfur Content of Diesel Fuel	0.5	%
Maximum Operation	52	hours/year (1 hour per week)
Maximum Fuel Consumption	1	gal/hr

Pollutant	Emission Factor (lbs/hp-hr)	Emission Rate (lbs/hr)	Emissions (tons/yr)
Particulate Material - PM / PM_{10}	0.0022	0.027	**0.0007**
Nitrogen Oxides - NO_x	0.031	0.378	**0.0098**
Carbon Monoxide - CO	0.00668	0.081	**0.0021**
Sulfur Dioxide - SO2	0.00205	0.025	**0.0007**
Volatile Organic Compounds - VOC	0.002514	0.031	**0.0008**

Note:
- Emission factors are from EPA AP 42, 3.3 Gasoline and Diesel Industrial Engines & 3.4 Large Stationary Diesel and All Stationary Dual-Fuel Engines 10/96. (Less than 600 hp)
- The hours of operation for the PTE are based upon the 1995 Memorandum from EPA regarding the limited operation of emergency generators.
- This source is exempt from permitting requirements because the maximum heat input is less than 1.0 MMBtu/hr, as specified by IDAPA 58.01.01.222.02.d.
  (1.0 gal/hr * 137,000 Btu/gal = 137,000 Btu/hr)

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Criteria Pollutant Emission Calculations - Liquid Petroleum Gas
MotivePower Facility
Apple Street

Two propane heaters are used in temporary shelters at the facility. Each heater has a heat input of 0.350 MMBtu/hr and uses approximately 4,000 gallons of liquid propane per year from October through April. The emission of criteria pollutants are calculated using the total propane usage for the two heaters and EPA AP 42, 1.5 Emission Factors for LPG Combustion.

PTE calculations are based on the maximum annual total LPG consumption for the heaters for the Apple Street facility (7,800 gal in 2005) plus a factor of 1.5 to account for fluctuations in weather and operational conditions. LPG consumption is obtained by the selected rental company.

Maximum LPG Usage =	**11,700**	gal
Heat Rating of Propane =	**90,500**	Btu/gal
Hourly Fuel Consumption Rate =	**3.867**	gal/hr

The calculated emissions are as followed:

Pollutant	Emission Factor lbs/10^3 gal	Emissions lbs/hr	Emissions tons/yr
Particulate Material - PM / PM_{10}	0.6	**0.0023**	**0.004**
Nitrogen Oxides - NO_x	19	**0.073**	**0.111**
Carbon Monoxide - CO	3.2	**0.012**	**0.019**
Sulfur Dioxide - SO_2	0.44	**0.0017**	**0.003**
Total Organic Carbon - TOC	0.5	**0.0019**	**0.003**

Note:
Sulfur concentration based on a Marathon Propane Gas MSDS
S = 0.01 % by weight @ 4.4 pounds of propane /gallon.